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THE ARMY REHABILITATION PROGRAM FOR THE BLIND AND THE DEAFENED

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The rehabilitation of seriously handicapped military personnel becomes increasingly important as more and more of our troops engage in combat. Among the most formidable disabling conditions encountered in soldiers are blindness, deafness, amputations of the extremities, paralysis following nerve injuries, and facial disfigurement. In this paper I shall discuss only the Army program for rehabilitating personnel with loss of sight and impairment of hearing.

In Surgeon General's Office Circular Letter No. 162, issued last September, it was pointed out that the particular emotional problems of the newly blinded and deafened and their need for assistance in learning how to live without sight or hearing create a need for specialized rehabilitation.[1] A discussion of these disabilities will illustrate the Army's basic philosophy of management of handicapped military personnel.

Misinformation about blindness and deafness as a military problem is being circulated at this time. There have been rumors to the effect that many thousands of cases of deafness among servicemen may be anticipated as a result of this war, that every combat aviator may expect to suffer serious impairment of hearing, that there are thousands of war blinded and that a gigantic breeding program for dogs to guide blinded soldiers will be necessary to meet the demand. Fortunately, all of these rumors are untrue.

Let us review some facts and attempt to determine the extent of the problem of blindness in soldiers.

As a result of World War I,[2] France in 1922 had 2,200 blinded pensioners; Great Britain had slightly under 3,000. The United States Veterans Administration figures show about 300 pensioners with service connected visual loss. The American war blinded were cared for in General Hospital No. 7. Here, in a converted private estate on the outskirts of Baltimore, rehabilitation of the blind was started by teachers of braille and an experienced leader in recreation and handicraft. Of a total of 117 cases of blindness treated, 65 soldiers were totally blind and 52 had varying degrees of visual loss. High explosive shells, shrapnel and hand grenades caused 67 of these 117 cases of disability, and machine gun and rifle bullets caused 12.[3]

So far in the present world war the renowned St. Dunstan's agency for the care of the blind in Great Britain has known of 288 British servicemen and civilian casualties.

The United States Veterans Administration reported, as of January 1944, 99 veterans with varying degrees of blindness. Of the 86 discharged with blindnesss from the Army, 17 were totally blind.[4] As of the first of March, 73 cases of blindness were registered with the Office of the Surgeon General. There were, in addition, 2 blinded prisoners of war under treatment. Blindness is said to exist, by Army definition, when the best corrected vision is 20/200 in the better eye.

Of 42 patients admitted to one of the hospitals designated to care for the blind in this war, the reports show 17 cases of blindness due to wounds incurred in action, 18 cases due to injuries accidentally incurred and 7 cases due to disease. Six of the 17 battle casualties were caused by land mines or booby traps and 7 by shrapnel. Land mines caused 6 of the 18 accidental injuries, and dynamite blasts caused 5.[5] Sir Ian Frazer has been quoted [2] as saying that in World War I two thirds of the cases of blindness were due to wounds caused by high explosive shells from which fragments of metal penetrated the eyes. In the present war he is reported to have found more blinded by concussion followed by hemorrhage. A detailed analysis of the American blinded has not yet been made.

Two hospitals, Dibble General Hospital, Menlo Park, Calif., and Valley Forge General Hospital, Phoenixville, Pa., have been especially equipped and staffed as ophthalmic centers. Here programs of social rehabilitation are initiated and carried out simultaneously with medical or surgical treatment that may be required. To insure that blinded soldiers shall have the benefit of the most expert care at all times, the War Department requires that each such casualty occurring in the United States or returned from overseas shall be reported to the Surgeon General, in whose office the case is then followed until medical and surgical treatment and social rehabilitation are completed and the patient is transferred to the Veterans Administration for vocational training.

It is important to have specially trained personnel contact the blinded soldier early in order to encourage the patient and keep him looking hopefully forward to the prospect of a full and useful life. A consultant, who has been blinded in this war and is well adjusted

1. Rehabilitation of the Blind and the Hard of Hearing in Army Hospitals, Circular Letter No. 162, Office of the Surgeon General, Sept. 11, 1943.
2. Farrell, G.: Help for the Blinded Soldier, Hygeia **22**: 259 (April) 1944.
3. Barton, W. E., Major, M. C.: A Program for the Care of the Blind in World War II in Army Hospitals, Proc. Am. A. Workers for Blind, July 1943, pp. 51-55.
4. Hines, Frank T., Brigadier General, U. S. Army: Personal communication to the Surgeon General of the Army, Jan. 26, 1944.
5. Grear, J. N., Jr., Lieut. Col., M. C., Chief, Rehabilitation Serv. to Blind: Report to the Surgeon General.

to his own handicap, is dispatched to the first hospital of residence of a newly blinded casualty in order to provide psychologic and emotional support. The blind consultant also arranges a temporary training program to bridge the period of time until the newly blinded soldier may be safely sent to one of the two special hospitals.

At the hospital designated for the care of the blind, the soldier is taught how to dress and shave, and how to feed and care for himself. He is taught to use a typewriter, as this must now be a means of communication with his friends. He is taught how to write and how to tell the time of day with a braille watch. The Talking Book opens to him the world of literature, even before he learns to read braille. Radios, which are made available, offer much enjoyment. He is taught the braille method of reading and writing, and those who enjoy reading are encouraged to extend their study of braille. There teachers whose eyes have not been injured insure neatness of dress and good posture. Occupational therapists teach them to use their hands, to develop new perceptual skills and manual dexterity, and thus assist in restoring confidence through useful work. When the patient has learned to get about readily, he is encouraged to enlarge his social contacts, visit the city, go to concerts and get about in the world among his friends. The Red Cross makes an important contribution also in developing the family's understanding of the problems of the blind. The family is advised concerning how it may assist the patient and encourage him to develop self reliance.

The President's "Committee on Rehabilitative Measures to be carried on by the War and Navy Departments with respect to blinded service men" recently extended the responsibility of the Army beyond the customary period required for adequate medical and surgical treatment. Under this plan a center will be established adjacent to one of the special Army hospitals for the blind. Here blinded service personnel of the Army, Navy and Marine Corps will be given further training in social adjustment for an average period of from four to six months. During this time, aptitudes and interests will be explored and tested in prevocational training.

The Veterans Administration is charged by law with the vocational training of incapacitated discharged soldiers. To enable the blind promptly to become self supporting, the Veterans Administration will complete arrangements for such vocational training prior to their discharge from the service.

There is much interest in the matter of guide dogs, the public generally having the idea that every blinded person should have one. Experience shows, however, that only about 10 per cent of the blind can use dogs advantageously. Many blinded soldiers will develop the ability to get about with the minimum of assistance. With a skilfully used cane they are inconspicuous and unencumbered. Some individuals do not like dogs; others are temperamentally unfitted for canine companionship. It is important to have determined the type of work to be done and whether a guide dog will be practical and compatible with the future choice of a job. Even when the use of a dog is contemplated, it is better for the blinded individual first to develop his complementary senses to the fullest extent. The Veterans Administration and the Medical Department of the Army concur in the belief that a veteran should secure a guide dog only when it is shown that the dog is the best solution to the veteran's problem. Private guide dog agencies have agreed to provide dogs to blinded soldiers either gratis or at nominal cost. It appears that the facilities of these agencies will be adequate to meet all anticipated needs and that governmental aid in supplying dogs will not be required.

THE HARD OF HEARING

The problems involved in rehabilitating the hard of hearing do not differ greatly from those outlined for the care of the blind. The immediate objective, however, is different, for many of the hard of hearing patients, after adequate medical treatment, can be trained in speech and lip reading, fitted, in most cases, with a hearing aid, and then returned to limited duty in the military service.

In the first world war, 1 man in 5,000 was discharged for defective hearing.[6] The Veterans Administration on Oct. 28, 1943 had on the compensation or pension rolls 416 veterans of World War I who were totally deaf, and 12,397 who were partially deaf. Meningitis was the cause of 25 per cent of the hardness of hearing.[7]

The Statistical Division of the Surgeon General's Office estimated on Dec. 30, 1943 that the average annual admission rate to Army hospitals for deafness and defective hearing was approximately 1 in 1,000 per annum. This estimate was extended on Feb. 12, 1944 to predict a discharge rate for men with defective hearing of about 34 per hundred thousand annually (as compared with 20 per hundred thousand annually in World War I). On Jan. 1, 1944, 313 patients with defective hearing had been admitted to the three hospitals which have rehabilitation services for the deaf.

In a study of 102 cases of deafness [8] 54 were of perceptive deafness, 34 had mixed perceptive and conductive deafness, 4 had conductive deafness, 6 had otosclerosis and 4 were deaf because of other disorders.

In another series of 153 cases [9] defective hearing had existed prior to induction in 48 cases and was considered progressive and not aggravated by service, 21 cases of partial deafness resulted from the blast of high explosives during enemy action, 10 cases of partial deafness were due to heavy firing not acquired during combat and in 17 cases impairment of hearing existed prior to induction and was considered to have been aggravated by service.

While the rate of incidence of deafness seems increased, not as many cases have developed as might have been expected from the increased hazards in this war due to blast and noise. Persons with impaired hearing have not been received for rehabilitation from the Army Air Forces in greater proportion than from other branches of the service to date.

Three hospitals have been designated for special care of the deaf. These are the Deshon General Hospital, Butler, Pa., the Borden General Hospital, Chickasha, Okla., and the Hoff General Hospital, Santa Barbara, Calif.

6. Communication from Statistical Division, Office of the Surgeon General, Oct. 30, 1943.
7. Communication from Office of Budget and Statistics, Veterans' Administration, Oct. 28, 1943.
8. Barton, W. E., Major, M. C.: The Philosophy of Army Rehabilitation Program, read before the War Problems Conference of the National Association of Teachers of Speech, New York, Dec. 30, 1943.
9. Mobley, M. R.: Annual Report of the Deshon General Hospital, Jan. 1, 1944.

In Circular No. 81, issued Feb. 23, 1944, the War Department directed that "every case in which the impairment of hearing shows a true loss in the better ear of 30 decibels of hearing within the conversational range (256-2,048 decibels), or a loss of $^{3}/_{15}$ or below to whispered voice, when an audiometer is not available, in a case of stationary or progressive deafness free from acute inflammatory aural disease, will be transferred to a hospital designated for the rehabilitation of the deaf at the earliest practicable date.

"Hearing aids are furnished to personnel in active military service who are suffering from hearing defects that preclude the performance of military duty, regardless of line of duty status, when examination shows that such aids will materially improve the hearing of the individual concerned." [10]

The three hospital centers for the deaf previously mentioned are the only ones authorized to fit hearing aids. In each case the particular make or model of hearing aid is selected only after careful objective and subjective tests made by the Army's own acoustic experts. Individual ear molds are supplied in each case.

The rehabilitation service to the deafened provides training in residual hearing and lip reading. Experienced teachers give daily lessons to those who require such training. Group practice and movie film instruction have been found to shorten the learning time for lip reading. Most patients become able to read lips in from six to eight weeks. Speech teachers are also on duty in the three special hospitals to prevent deterioration in speech.

It is pointed out again that after periods of rehabilitation many of these men can be returned to military duty in specialized assignments. Those servicemen who are unfit for further military duty will be enabled to secure vocational training more easily and ultimately to obtain satisfactory positions in civil life. In partial summary it may be said that:

1. The number of cases of blindness in our Army in this war is still small, 73 having been recorded by March 1, 1944.

2. Two specially staffed and equipped ophthalmic hospitals receive all newly blinded casualties. A reporting system insures that all cases are found and transferred to these special hospitals for necessary medical and surgical care and initiation of social rehabilitation.

3. The Army is setting up a facility for the social rehabilitation of the blind, following necessary hospitalization, not only for its own, but also for the blind of the Navy and the Marine Corps. The program will provide for social adjustment, teaching of braille and prevocational training.

4. Deafness in World War II is increased over that in World War I on the basis of figures now available.

5. The Army rehabilitation program for the deaf includes (*a*) treatment of all deafened in three special hospital centers, (*b*) supplying properly fitted hearing aids to all who will benefit by their use and (*c*) offering instruction in residual hearing, lip reading and proper speech control.

6. Hard of hearing servicemen are salvageable for many types of specialized duty.

10. War Department Circular No. 81, Sect. 4, Feb. 23, 1944.

THE TREATMENT OF GONORRHEAL URETHRITIS

WITH SULFONAMIDES AND PENICILLIN COMBINED

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When penicillin became available at the U. S. Naval Hospital, Bainbridge, Md., in October 1943, a large number of patients with sulfonamide resistant gonorrheal urethritis were under treatment. Most of them had been treated for long periods, almost all for more than forty days, a fairly large number for more than sixty days, and one man had been on the sick list one hundred and twenty-eight days. Treatment had consisted in repeated courses of sulfathiazole and sulfadiazine (table 1), in most instances with the addition of standard types of local therapy. The penicillin sodium was procured from two nationally known pharmaceutical firms. At first the dosage recommended by Keefer and his associates,[1] 160,000 Oxford units at the rate of 10,000 units every three hours, was injected into the muscle. It soon became apparent, however, not only that penicillin was brilliantly efficacious but that its action was so rapid that in all the cases clinical and bacteriologic cure resulted within twenty-four hours. In many the urethral discharge and all symptoms ceased within nine hours. In the meantime Turner and Sternberg [2] suggested that 50,000 Oxford units would probably be efficacious in gonorrheal urethritis, although they predicted, apparently as the result of experience, that 10 to 20 per cent failures might be expected with such dosage. Those considerations, together with the limited availability of the drug and the need to conserve it, led us progressively to decrease the dosage, until finally a series of 73 sulfonamide resistant cases were treated with 50,000 Oxford units of penicillin each (table 1, group B). There was but 1 failure. As a result, however, of conversations with Dr. C. S. Keefer and with Capt. W. W. Hall of the Medical Corps, U. S. Navy, it was suspected that the striking success with 50,000 units obtained in that series might be more fortuitous than real. They pointed out that the assay of penicillin is as yet subject to such limitations that in using doses of 50,000 units the variation of actual dosage administered may range from as little as 30,000 units to as much as 70,000 units. Foster and Woodruff [3] have written of the limitations and

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Since this article was prepared the authors have treated 71 additional cases with combined sulfonamide-penicillin. The results were in all respects similar to those described and do not differ statistically from those of table 2.

1. Keefer, C. S.; Blake, F. G.; Marshall, E. K., Jr.; Lockwood, J. S., and Wood, W. B., Jr.: Penicillin in the Treatment of Infections, J. A. M. A. **122**: 1217 (Aug. 28) 1943.

2. Turner, T. B., and Sternberg, T. H.: Management of the Venereal Diseases in the Army, J. A. M. A. **124**: 133 (Jan. 15) 1944.

3. Foster, J. W., and Woodruff, H. B.: Microbiological Aspects of Penicillin: I. Methods of Assay, J. Bact. **46**: 187 (Aug.) 1943; Improvements in the Cup Assay for Penicillin, J. Biol. Chem. **148**: 723 (June) 1943.

difficulties in performing accurate assay of penicillin. Moreover, a subsequent report from the Army [4] indicated that when 50,000 units of penicillin alone was used to treat sulfonamide resistant gonorrheal urethritis the failures were in excess of 15 per cent. In the meantime Rammelkamp and Keefer [5] had suggested that a combination of a sulfonamide compound with penicillin might prove more effective than either drug alone in staphylococcic infections. In their preliminary observations they had observed that "the addition of small amounts of penicillin, which in itself displays no killing effect against staphylococci, will enhance the antistaphylococcal effect of sulfathiazole in whole defibrinated blood." It was desirable, therefore, in view of these considerations to investigate the effect of a combination of sulfathiazole and small doses of penicillin on acute gonorrheal urethritis. Table 2 summarizes the results of that investigation.

METHODS

The criteria of diagnosis of gonorrheal urethritis were a history of exposure, when it could be obtained, the presence of a purulent urethral discharge and demonstration of Neisseria gonorrhoeae in smears. Criteria of cure were disappearance of symptoms and of urethral discharge, and failure to find and to culture Neisseria gonorrhoeae from material obtained by prostatic massage between the fourth and fifth days after the completion of treatment, and again between the tenth and fifteenth days. The culture medium employed was a beef extract agar base containing bactotryptose or neopeptone with 0.03 per cent dextrose and 5 per cent sodium chloride with 10 cc. of a 0.5 per cent solution of paraaminobenzoic acid added to each liter of medium.

The treatment of patients listed in table 1 consisted in the administration of penicillin as shown. The treatment of all patients listed in table 2 consisted in the following: On the first day 8 Gm. of sulfathiazole was given orally in four divided doses; on the second day 4 Gm. of sulfathiazole in divided doses was given with the concomitant administration of 50,000 Oxford units of penicillin at the rate of 10,000 units (5,000 units per cubic centimeter) every three hours in the muscle. Intramuscular injections at the rate of 10,000 units every three hours were used as a result of the studies of Rammelkamp and Keefer,[6] of Dawson, Meyer and Chaffee [7] and because our previous experience had indicated that that rate was highly efficacious.

TABLE 1.—*Patients with Sulfonamide Resistant Gonorrheal Urethritis Treated with Penicillin*

Patients	Total Penicillin Units	Concentration per Cc., Units	Units per Dose	Frequency
Group A*				
4	160,000	5,000	10,000	3 hours
17	150,000	5,000	10,000	3 hours
6	145,000	5,000	10,000	3 hours
1	140,000	5,000	10,000	3 hours
2	130,000	5,000	10,000	3 hours
34	100,000	5,000	20,000	3 hours
39	100,000	5,000	20,000	4 hours
3	80,000	5,000	20,000	4 hours
106				
Group B†				
69	50,000	5,000	10,000	2 hours
4	50,000	5,000	5,000	1 hour

* Average dose of sulfonamide prior to beginning penicillin, 52.3 Gm. ranging from 16 to 100 Gm.
† Average dose of sulfonamide prior to beginning penicillin, 24.7 Gm. ranging from 8 to 56 Gm.

TABLE 2.—*Patients with Gonorrheal Urethritis Treated with Sulfathiazole (12 Gm.) and Penicillin (50,000 Oxford Units) Combined*

	Cured	Failed	Total	Per Cent Failed
White				
Group A*	25	2	27	7.40
Group B†	39	4	43	9.30
Total white	64	6	70	8.57
Negro				
Group C‡	112	2	114	1.75
Group D§	46	2	48	4.16
Total Negro	158	4	162	2.47
Total all cases	222	10	232	4.31

* White recruits.
† White men with acute untreated disease.
‡ Negro recruits.
§ Negro men with acute untreated disease.

The data from the study are presented in the accompanying tables. Our results with the use of penicillin in doses of 80,000 or more Oxford units in sulfonamide resistant gonorrheal urethritis are in accord with those obtained by others.[8] In almost all cases in which such doses were administered the symptoms and urethral discharge cleared and bacteriologic cure resulted within twenty-four hours or less. In a few a slight mucoid discharge persisted for a few days.

The results in sulfonamide resistant gonorrhea in patients who received only 50,000 units of penicillin (table 1, group B) were unexpected in that there were no failures. The series (73 cases) seems somewhat large to be accounted for by mere chance. Because, as already indicated, the error of the assay of penicillin may be considerable when dealing with small amounts, it might be supposed that the patients actually received considerably more than 50,000 units, but against such a supposition is the fact that several different batches of the drug obtained from two different pharmaceutical firms were used in treating those patients, and it is unlikely that an error would always have been in the same direction. Although the aforementioned factors may have played a role, we are of the opinion that the excellent results obtained with the combined drugs occurred because the drugs actually enchanced the efficacy of each other. Enhanced clinical effectiveness in the treatment of staphylococcic infections by using sulfonamide compounds and penicillin combined was predicted by Rammelkamp and Keefer [5] as a result

4. Hall, W. W., Capt., M. C. U. S. Navy: Personal communication to the authors.

5. Rammelkamp, C. H., and Keefer, C. S.: Penicillin: Its Antibacterial Effect in Whole Blood and Serum for the Hemolytic Streptococcus and Staphylococcus Aureus, J. Clin. Investigation **22**: 425 (May) 1943.

6. Rammelkamp, C. H., and Keefer, C. S.: Absorption, Excretion and Distribution of Penicillin, J. Clin. Investigation **22**: 425 (May) 1943.

7. Dawson, M. H.; Hobby, G. L.; Meyer, K., and Chaffee, E.: Penicillin as a Chemotherapeutic Agent, Ann. Int. Med. **19**: 707 (Nov.) 1943.

8. Herrell, W. E.; Cook, E. N., and Thompson, L.: Use of Penicillin in Sulfonamide Resistant Gonorrheal Infections, J. A. M. A. **122**: 289 (May 29) 1943. Mahoney, J. F.; Ferguson, C.; Buchholtz, M. S., and Van Slyke, C. J.: The Use of Penicillin Sodium in the Treatment of Sulfonamide Resistant Gonorrhea in Men, Am. J. Syph., Gonor. & Ven. Dis. **27**: 525 (Sept.) 1943. Robinson, J. N., cited in Penicillin, Foreign Letters (London), J. A. M. A. **124**: 117 (Jan. 8) 1944. Cook, E. N.; Pool, T. L., and Herrell, W. E.: Further Observations on Penicillin in Sulfonamide Resistant Gonorrhea, Proc. Staff Meet., Mayo Clin. **18**: 433 (Nov. 17) 1943. Dawson, M. H., and Hobby, G. L.: The Clinical Use of Penicillin: Observations in 100 Cases, J. A. M. A. **124**: 611 (March 4) 1944. Bloomfield, A. L.; Rantz, L. A., and Kirby, H. M. M.: The Clinical Use of Penicillin, ibid. **124**: 627 (March 4) 1944. Keefer, Blake, Marshall, Lockwood and Wood.[1]

of their experimental observations. Further support of that idea will become evident when the results listed in table 2 are studied. Clinically the only difference between the patients receiving 50,000 units and those receiving the larger doses was that in the former the urethral discharge abated somewhat more slowly, usually over a period of two to three days, but the patients were bacteriologically cured just as promptly.

Group A of table 2 was composed of white men whose disease was discovered in the receiving line for recruits. Because the histories were usually unreliable, estimation of the duration of their disease or of previous treatment was not attempted. In many the disease had probably existed for prolonged periods and had received considerable treatment; in others it was probably of fairly recent origin, frequently being the result of a "last fling" just prior to the induction into the Navy. Group B of table 2 consisted of white men who had been in naval service for at least six weeks. Because such men report promptly to the sick bay, it is safe to assume that all cases were of recent origin and that they had not received previous treatment. Table 2, group C, is similar to group A except that the patients were Negroes; group D corresponds to group B with the same exception.

That gonorrhea in Negroes is more amenable to treatment than it is in white men has long been the belief of physicians. Turner and Sternberg [2] have recently shown a striking difference between the races in the effectiveness of treatment with sulfonamides. The results given in table 2 show a similar difference in the racial responses to treatment with penicillin and sulfonamides combined.

The results shown in table 2 also support the idea that sulfonamides enhance the effectiveness of penicillin. In an analysis of almost 7,000 cases Turner and Sternberg [2] showed that from 25 to 35 per cent of white men with gonorrheal urethritis fail to respond to one course of treatment with sulfonamides and that approximately 10 per cent of Negroes fail to respond. It has also been demonstrated that treatment of the disease with 50,000 units of penicillin alone results in upward of 15 per cent failures.[4] In contrast, the data of table 2 show that with the combined use of a moderate amount of sulfathiazole with 50,000 units of penicillin from one half to one third as many failures occur as result when similar amounts of the drug are used alone. Furthermore, when previous treatment with sulfonamides is followed by the combined sulfonamide-penicillin therapy the rate of cure is even greater, especially in the Negro (table 2, groups A and C). Whether or not the increased effectiveness is due to true synergism between the drugs is not clear, because, as stated, penicillin therapy is also more efficacious for patients who have received previous treatment with sulfonamides. One might, of course, assert that the greater effectiveness when the drugs are used simultaneously is due not to an additive effect or to an enhancing of one drug by the other but merely to the fact that a certain number of patients are cured by one drug while the other drug was ineffectual. From a practical standpoint, however, the important factor is that the concomitant use of moderate amounts of sulfonamides (12 Gm.) and of penicillin (50,000 units) is strikingly more effective than when either drug is used alone.

Clinically it was noteworthy that the patients treated concurrently with the drugs were cured promptly, and that except for 1 patient failure to cure was obvious within three or four days. When the treatment failed, symptoms failed to disappear, the urethral discharge abated but slightly or not at all, and smears remained positive for Neisseria gonorrhoeae. Only 1 patient, whose symptoms and discharge cleared immediately and who was bacteriologically "cured" on the seventh day, later had a recurrence of mucoid discharge from which Neisseria gonorrhoeae was cultured on the sixteenth day.

When failure to cure with the combined drugs occurred, the patients were immediately treated with 100,000 units of penicillin alone; all were promptly cured. In the entire series of cases no untoward effects from penicillin were observed.

From the military standpoint the primary consideration in treating venereal disease is saving of manpower days. From that point of view it might be considered, because of the almost complete effectiveness of treatment of uncomplicated gonorrheal urethritis with 100,000 Oxford units of penicillin, that that dose should be used in all cases. Nevertheless, in any large scale program of treatment cost must be considered, and of even more importance than cost at present is the question of availability of penicillin. The combined use of sulfonamides with small doses of penicillin has the advantages of rapid cure in a high percentage of cases, especially in the Negro, and the reduction essentially by half in the cost and the amount of the drug used. Furthermore, the ease and the promptness of recognition of the few failures which do occur when the combined treatment is used make that method from a military point of view fully as practical as the use of larger doses.

CONCLUSIONS

1. Penicillin sodium was used in the treatment of a total of 411 patients with gonorrheal urethritis.

2. A combination of moderate doses of sulfathiazole and small doses of penicillin sodium was used in the treatment of 232 patients.

3. Gonorrheal urethritis of the Negro is more susceptible to treatment with penicillin and with penicillin and sulfathiazole combined than it is in the white race.

4. Sulfathiazole and penicillin appear to enhance the effect of each other against Neisseria gonorrhoeae.

5. The combined use of moderate amounts of sulfathiazole and of penicillin is a safe, rapid, efficient and economical method of treating gonorrheal urethritis.

Origins of Greek Medicine.—From the prevailing remnants of the older civilization—the Egyptian, the Minoan and the Babylonian—the Greeks obtained the foundations of their knowledge of medical practice. To Egypt the Greek debt was incalculable—though it was grudgingly admitted—and from Egypt was derived the concepts of the divine origin of medicine, an appreciation of rigid medical ethics and a knowledge of pharmacology. This is best exemplified in the parallel gods of healing—Apollo and Thoth—the deification of the semi-legendary figures of Aesculapius and Imhotep and the polypharmacy of both races; and much of the wholesomeness of the Hippocratic Oath reflects the probity of Egyptian practice. From the Minoans, whose submerged and almost lost culture focused on the island of Crete, originated the Serpent Symbol and some advanced ideas of sanitation and hygiene. From the Babylonians, dwelling in the valley between the Tigris and the Euphrates, came many of the Grecian superstitious beliefs and demoniac theories.—Ricci, James C.: The Genealogy of Gynaecology, Philadelphia, Blakiston Company, 1943.

THE TEACHING OF DRUG THERAPY

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My interest in the subject of drug therapy has been again aroused by the following possibly dangerous incident. I asked my intern to prescribe tincture of nux vomica for a patient who was leaving the hospital and who was to have the prescription filled in his home town 150 miles from Chicago. The intern wrote the following prescription: "℞: Tr. Nux Vomica oz. 6 Sig. 1 teaspoonful in ½ glass of water 3 times a day." The standard dose is 0.5 to 2 cc. A teaspoon holds 4 to 7 cc.

Several years ago I had a similar experience. I asked one of my fellows in urology to prescribe quinine sulfate for a child and to make a palatable mixture. He told me frankly that he had no idea how to prescribe quinine sulfate so as to make it palatable. When I questioned him about the instruction he had received in medical school on this frequently used agent, his reply was that the time was spent on the chemical formula, the spectroscopic picture and so on, and that he had not received any instruction on how the drug was to be administered.

Results of Analysis

	Location of Pharmacy			
	Loop	Residential I	Residential II	Hospital
Nonproprietary (official and N. N. R.) prescriptions	62.2%	61.7%	50%	69.4%
Proprietary remedies	26.9	27.4	38.1	14.8
Vitamins	10.9	10.9	2.9	15.8

Every one will agree that therapeutics holds a place of great importance in the treatment of the patient. In order to get some idea of how and what the present day physician prescribes in the treatment of his patient, 5,000 consecutive prescriptions from the files of four prescription pharmacies in Chicago were studied. One of the pharmacies was in the loop, two were in residential sections, and one was the pharmacy of a teaching hospital. For purposes of study, prescriptions were classified under three headings: (1) nonproprietary (official and N. N. R.) prescriptions; (2) proprietary remedies; (3) vitamins.

The results of this analysis are given in the accompanying table.

During this survey I was greatly impressed by a statement from several of the pharmacists to the effect that they can tell what detail man is calling on the doctors in their neighborhood by the type of prescriptions that begin to flow into the pharmacy. It seems to me that it is a sad state of affairs when physicians are prescribing as many as 38 per cent proprietary remedies on the recommendations of salesmen for drug houses.

An analysis of the table offers a significant finding: The teaching hospital has the lowest percentage, which is what one would expect to find in any progressive center.

When the druggists were asked to give their impressions as to why such large quantities of proprietary preparations were used, they answered rather glibly that the physicians have not been taught the art of prescription writing. I think the fault lies deeper than this: students frequently are not taught to choose a specific drug for a specific disease and symptom and are not encouraged to apply the principles they have been taught.

Surely the young physician or the recent graduate should be familiar with the doses, actions and methods of administration of such common simple everyday remedies as tincture of nux vomica and quinine sulfate. Has too much emphasis been given to the so-called scientific side—that is the experimental research laboratory—of this subject at the expense of equipping the graduate with the necessary instructions in the art of choice of drugs, prescription writing, dosages and need for considering every patient as an individual?

In my discussions with interns, residents and men just beginning practice I have obtained much to substantiate an impression of insufficient instruction in therapeutics, in materia medica and in prescription writing. Many have volunteered the statement that pharmacology was the poorest taught subject in the medical school.

In order to obtain information on the teaching of pharmacology and prescription writing, questionnaires were sent to the departments of pharmacology of the 68 four year medical schools. Replies were received from 49 schools. A study of the replies from these 49 schools showed that there were 146 teachers responsible for instruction in pharmacology. Of this number 88 professors, or roughly one half, held the degree of doctor of medicine. Of these 146 teachers, only 43 had practiced medicine.

The number of hours devoted to pharmacology ranged from 7 to 277. All schools replied that instruction was given in prescription writing. The time devoted to this phase of pharmacology ranged from 1 to 180 hours.

It is exceedingly interesting to note some of the answers in reply to my questionnaire, such as the following: "Young graduates today cannot write prescriptions." Another pharmocologist thought the field was somewhat neglected. "It should occupy a much larger place than it does at present."

I cannot agree with the point of view expressed in some of the answers, namely: "Prescription writing is a minor item in a crowded curriculum." "Prescription writing can be given in a few hours of didactic instruction." "Prescription writing has no place in modern pharmacology." "The medical student must defer his acquaintance with many drugs until a later day." When? After his patients have died, as he learned by trial and error the intricacies of drug therapy?

It is difficult for me to understand how a professor responsible for instruction to a student can say that prescription writing has no place in modern pharmacology or that he must defer his acquaintance with many drugs until a later day. One might just as well say that the teaching of surgical technic has no place in a course in surgery.

On the other hand, I do agree with the statements that it should occupy a much larger place than it does, that prescriptions should be written in English and that they should be legible, and that instruction in this subject should be continued in the clinic.

I wish to agree with Dr. Haag's statement "I think that pharmacology should be taught primarily from the point of view of its usefulness to the practicing physician."[1] I think also that the student will profit if the instructor chooses carefully the drugs on which

1. Haag, H. B.: The Scope of Pharmacology, South. M. J. **23**: 3-12 (March) 1922.

he will lecture rather than throwing out haphazardly an endless list of drugs for the student to memorize.

The prescription as written by the physician is a message to the pharmacist. If the physician cannot write a prescription, how is it possible for him to send a message to the pharmacist to compound the drugs that may be needed in an individual case? It is my opinion that the teachers giving the courses in pharmacology have lost sight of their primary function, which is to teach the student pharmacology and to lay the foundation for materia medica and therapeutics.

Pharmacology is the basis for all materia medica that the physician will practice in carrying out the responsibility of his chosen profession. Fortunately there are a good many pharmacologists keenly aware of the shortcomings of this phase of medical education.

Although the pharmacologist is fundamentally responsible for pharmacology, materia medica and therapeutics, not all of the fault may be laid at his door. The primary fault, yes, when he does not teach the fundamentals and does not teach prescription writing; but this is only part of the picture. The clinician must assume a certain amount of responsibility for continuing the student's education in materia medica and therapeutics. The time has surely passed when it was smart to be a therapeutic nihilist. Unfortunately, many clinicians lay great emphasis on pathology, diagnosis and differential diagnosis and only too frequently gloss over the treatment.

When the young doctor graduates and takes up his internship and residency, his education in therapeutics should continue. Therefore it is the obligation and the duty of the attending men to devote a certain amount of their time to the instruction of the young physician in this all important subject.

Unfortunately many hospitals, in order to save time and for various other reasons, use stock preparations, such as Dr. Carl's Cough Medicine or Dr. Anderson's Arthritis Medicine. Many times various mixtures are designated by numbers and letters. The interns and residents in these hospitals prescribe by means of these predesignated numbers and names, many times not knowing at all the contents of the prescription. I was greatly impressed at one time when called in consultation at a renowned medical center. A solution designated by name had been given to the patient for a week. The attending physician had not yet made his appearance. The residents and the interns admitted that, although the patient had been receiving this solution for a week, not one of them had any idea of its contents!

Many pharmacologists are keenly aware of this situation, and many of them have taken steps to correct it. The school of pharmacy at the University of Virginia was asked several years ago to aid in the teaching of prescription writing to medical students. In this way the more common pitfalls of prescription writing are brought to the attention of medical students. A further aid is for the instructor in therapeutics to place his teaching on a foundation of official and N. N. R. drugs and drugs of an experimental nature whose usefulness seems evident.

Teachers and practitioners alike do well to follow the statements of the Council on Pharmacy and Chemistry of the American Medical Association. This body provides publications in which are described the actions and uses of all official agents and of nonofficial agents which are found to conform to the Council's rules for admission to New and Nonofficial Remedies. Surely a total of 2,700 official and nonofficial drugs is sufficient to meet medical drug demands. Of no small significance is the fact that use of such agents in preference to proprietary drugs will permit savings of thousands of dollars.

In some institutions, conferences on therapeutics in the form of seminars are held. There seems to be a realization on the part of some of the teachers of these deficiencies and of the need to correct them. The seminars should not be dominated by one specialty; all contributors should have equal opportunity for discussion, so that the students will appreciate the value of the composite picture of the diagnosis and treatment of disease.

It is evident that the phase in medical education which relates to drug therapy needs change. I am greatly impressed, in reviewing the questionnaires, by the large number of men that teach pharmacology who have never been engaged in the practice of medicine. I am also impressed by the "memory" courses that are often substituted for "thinking" courses; while the practice of medicine is favored by the memories of its followers, progressive treatment results only from careful thought. To achieve the progress, all who have a share in the responsibilities should pursue with actual enthusiasm their opportunities to discharge such responsibilities. On medicine depends the health of the world. On the members of the medical profession depends the future of medicine, and every challenge for improvement must be met.

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CONTINUOUS CAUDAL ANESTHESIA

ANALYSIS OF 1,200 CASES WITH COMPARISON OF METHODS

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In the last hundred years obstetrics has evolved from a series of traditional rituals into a practical science. At the beginning of this transition the important points stressed were those concerning the care and delivery of the mother. Later, as the specialty developed and mortality rates declined, it was possible to give consideration to the mother's physical suffering. Also a variety of drugs became available, with morphine, scopolamine and the barbiturates becoming the most valuable for the management of labor. Their use, however, is objectionable owing to their depressing effect on the baby. Since the discovery of local anesthesia and the technic of caudal block, many obstetric cases have been managed with single injection caudal anesthesia for the second stage. This was not satisfactory, since it was not dependable and because other analgesia was necessary up to the point of delivery. Therefore the same objection to this type of management was present, namely depression of the baby. Lemmon [1] in 1940 introduced a brilliant advance in anesthesia, that of continuous spinal anesthesia. Edwards and Hingson [2]

Capt. Arthur B. Levan, M. C., A. U. S., and Miss Katherine McCloskey assisted in preparing the manuscript.
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Metycaine was supplied through the courtesy of Eli Lilly & Company. Pontocaine and procaine were supplied through the courtesy of the Winthrop Chemical Company.

1. Lemmon, W. T.: A Method for Continuous Spinal Anesthesia, Ann. Surg. **111:** 141 (Jan.) 1940.
2. Edwards, W. B., and Hingson, R. A.: Continuous Caudal Anesthesia in Obstetrics, Am. J. Surg. **57:** 459 (Sept.) 1942.

in 1942 adapted Lemmon's technic of continuous spinal to caudal anesthesia not only for the second stage but for a large portion of the first stage of labor. My colleagues and I have used continuous caudal anesthesia in our clinic since August 1942 and have previously reported our first 300 cases.[3] This report is a supplement to the previous one. Up to the present time we have managed 1,200 cases using this technic. A breakdown of this group may be seen in table 1.

TABLE 1.—*Breakdown of Cases*

Number of pregnancies		1,200
First pregnancy		996
One or more pregnancies		204
Complications		
Breech presentation		38
Posterior position		150
Spontaneous rotation	48	
Forceps rotation	102	
Multiple pregnancies		8
Posterior face		1

The types of solution used were three in number: procaine hydrochloride 1.5 per cent 600 cases, metycaine 1.5 per cent 500 cases and pontocaine 0.25 per cent 100 cases. These solutions were all prepared with isotonic solution of sodium chloride. In this series 996 cases were managed without any other type of analgesia with the exception of barbiturate premedication. One hundred and thirty-two patients were treated successfully in the terminal portion of their labors with morphine, scopolamine and the barbiturates as premedication. These cases will be discussed later. Thus, 1,128 patients, or 94 per cent, were delivered successfully under caudal anesthesia without any supplemental anesthesia at time of delivery. The remaining 6 per cent necessitated supplemental anesthesia for various reasons:

1. The needle was inserted into the subarachnoid space.
2. Hysterical patients became unmanageable.
3. Disproportion of head and pelvis with prolonged labor necessitated discontinuance of the caudal anesthetic.
4. Insertion of the needle into the canal was technically impossible in 4 cases.
5. A psychotic patient who was completely disoriented could not be managed.
6. The catheter slipped out in 2 cases in which the technic of taping was faulty.
7. There were severe nausea and vomiting.
8. Frank blood was obtained on insertion of the needle.
9. There were severe radicular pains.

The largest amount of procaine hydrochloride used was 1,000 cc. of 1.5 per cent in isotonic solution of sodium chloride, and the smallest dose given was 30 cc. of 1.5 per cent solution. The largest amount of metycaine hydrochloride given was 650 cc. of 1.5 per cent solution in isotonic solution of sodium chloride and the smallest amount 25 cc. of 1.5 per cent solution. The largest amount of tetracaine (pontocaine) hydrochloride was 100 cc. of 0.25 per cent solution in isotonic solution of sodium chloride, and the smallest amount was 50 cc. of 0.25 per cent solution. After experience with these drugs we prefer the use of procaine hydrochloride in isotonic solution of sodium chloride. The advantages and disadvantages may be seen in table 2.

The average duration of anesthesia with procaine for primigravidas was six hours and twenty minutes and for multiparas two hours and forty minutes. The average duration of anesthesia with metycaine hydrochloride was five hours for primigravidas and two hours and forty-five minutes for multiparas.

Continuous caudal anesthesia should not be used in case of (1) placenta previa and abruptio placentae, (2) disproportion between the head and pelvis, (3) gross abnormalities of the spine in the lumbosacral region, (4) patients who have had recent surgical procedures about the sacral area, such as excision of a pilonidal cyst, (5) patients with any cutaneous disease or with multiple boils or carbuncles, (6) patients who give a history of sensitivity to procaine or (7) very obese patients on whom the landmarks are not palpable.

Our series of cases may be broken down into three main groups:

Group 1. Multiparas (204 cases).

Group 2. Primigravidas when the cephalus was engaged, the cervix well effaced and labor progressing normally (792 cases).

Group 3. Primigravidas when the cephalus was not fully engaged and when the progress of labor was slow, yet contractions were severe (204 cases).

In the first two groups it made no difference at what stage of labor caudal anesthesia was started. As long as the patient was in labor, progress was not impeded and labor proceeded rapidly to termination.

In the third group caudal anesthesia alone was unsatisfactory. Caudal anesthesia could not be started in this group until the patient had progressed to 6 to 7 cm. dilatation with engagement of the head. If the anesthesia was begun before this time, dilatation was slowed and the head failed to descend into the pelvis. In cases in which caudal anesthesia was begun prior to 6 cm. dilatation, a two hour interval without anesthesia was necessary to allow for complete dilatation of the cervix and descent of the head to the pelvic floor. This was not due to failure of the anesthesia, as all of these patients were subsequently delivered satisfactorily with caudal anesthesia alone. From the patient's point of view it is not desirable to have complete anesthesia for a long period and then suddenly experience the excruciating pains of the terminal portion of the first stage

TABLE 2.—*Advantages and Disadvantages of Anesthetic Agents*

Agent	Advantages	Disadvantages
Procaine (600 cases) 1.5 per cent in isotonic solution of sodium chloride	1. Least toxic to mother 2. Less nausea and vomiting 3. Least toxic to baby (clinical impression) 4. Least blood pressure drop 5. Less motor paralysis (patient may move by herself in many cases)	1. Shorter duration of anesthesia (about 55 minutes for 20 cc.) 2. Longer delay (about 10 minutes) for anesthetic to take effect
Metycaine (500 cases) 1.5 per cent in isotonic solution of sodium chloride	1. Longer duration of anesthesia (about 1 hour for 20 cc.) 2. More rapid anesthesia (within 5 minutes)	1. More nausea and vomiting 2. More toxic to mother 3. More toxic to baby (clinical impression) 4. Greater blood pressure drop 5. Complete motor paralysis
Tetracaine (100 cases) 0.25 per cent in isotonic solution of sodium chloride	1. Practically no nausea and vomiting 2. Long duration of anesthesia (2-4 hours after 20 cc.) 3. No toxicity to baby (clinical impression from short series of cases)	1. Longest delay for anesthetic to take effect (about 30 min.) 2. Complete motor paralysis 3. Difficult to keep anesthesia at constant level owing to prolonged latent period of action of the drug (in 1 case anesthesia persisted for 5 hours after injection was stopped)

3. Siever, J. M., and Mousel, L. H.: Continuous Caudal Anesthesia in Three Hundred Unselected Cases, J. A. M. A. **123**: 424 (June 12) 1943.

of labor. Therefore it has been our policy to grade all patients on admission to the labor room so that they fall into one of the groups mentioned. We allow the first two groups of patients to ask for the anesthetic when they believe that they need relief. The third group of patients are managed by an entirely different method. When their pains become severe they are given a barbiturate and/or morphine and scopolamine and are managed with these drugs until the head descends to a plus 1 or 2 station and usually to 6 or 7 cm. dilatation. At this time caudal anesthesia is begun. By the time delivery is imminent the general analgesics have been dissipated, and at delivery no depressing effect on the child is noted. In our enthusiasm over continuous caudal anesthesia it is well not to forget the other methods of analgesia, for in many cases the combination of the two methods results in a much better management of labor than either method alone.

In all three groups we have found that the second stage of labor is greatly altered. This is particularly true among primigravidas. The alteration is due to two things: (1) the patient's having no desire to bear down, owing to anesthesia of the pelvic structures and (2) relaxation of the pelvic floor and perineum.

Anesthesia of the pelvic structures results in the patient's having no desire to bear down; therefore, if the attending physician is not watchful, the head may impinge on the perineum for hours. The relaxed pelvic floor slows the normal mechanism of flexion and rotation which occurs when the head comes in contact with the ordinarily elastic tissues. The combination of these two mechanisms may result in a second stage so prolonged as to be disastrous to the baby if the labor is not terminated by the obstetrician. Many patients, both primigravidas and multigravidas, are able to expel the baby when instructed to do so. However, in the majority of such cases more than two hours is necessary for completion of the second stage. It is our belief that more than two hours on the perineum is dangerous to the welfare of the infant. For this reason we routinely perform an episiotomy and utilize outlet forceps on our patients.

Persistent posterior positions occurred in 12 per cent of this series, whereas we previously observed it in only 4 per cent. This high percentage of posterior positions is attributed to the relaxation of the pelvic floor, with the resultant failure of a large number to rotate spontaneously. This is not a serious complication, since the extreme relaxation facilitates rotation either manually or with forceps.

We have managed 38 breech presentations with continuous caudal anesthesia. Progress was normal in all of these, and delivery of the head was considerably easier because of the relaxation of the pelvic floor. Eight sets of twins have been delivered with continuous caudal anesthesia. In all of these labors, progress was normal and delivery was greatly simplified. As caudal anesthesia does not have a depressing effect on the infant, it is particularly desirable in the management of labor in multiple pregnancies.

In our first 400 cases no oxytocics were given until after delivery of the placenta. Since that time we have used ergonovine hydracrylate $\frac{1}{320}$ grain (0.2 mg.) intravenously after delivery of the baby. The ergonovine is administered by the nurse after the physician is through caring for the baby and has returned his attention to the patient. We have found this to be satisfactory and have had only 1 retained placenta in our last 800 cases.

The over-all length of labor is increased with caudal anesthesia probably from one to two hours. This is attributed to the prolongation of the second stage of labor. The third stage of labor is shortened and hemorrhage is less than when general anesthesia is used.

The ease with which delivery is accomplished with continuous caudal anesthesia is an important advantage. No time is wasted by induction, as with general anesthesia. The patient is cooperative and in many cases is able to move from the delivery table to the carriage without help.

EFFECT ON THE BABY

Our gross fetal mortality was 32 deaths, or 2.6 per cent. Reference to table 3 will show the causes of fetal death.

When procaine hydrochloride was used, it was noted that slowing of the fetal heart rate occurred shortly after injection of the solution in 1 per cent of the cases. In the cases in which slowing of the heart rate was observed, meconium was expelled in large quantities by the baby after repeated injections. In the series receiving metycaine hydrochloride 20 per cent showed slowing of the fetal heart rate shortly after injection;

TABLE 3.—*Causes of Fetal Deaths*

Premature (less than 30 weeks)	14
Stillborn (dead before admission to hospital)	7
Stillborn (cause unknown; babies viable on admission to hospital and died before delivery; autopsies in all cases)	5
Monster	4
Cerebral hemorrhage	2

in these cases also large quantities of meconium were expelled, in many of them after the second injection of the solution. Four of the infants in this series were stillborn, and at autopsy nothing abnormal was revealed except diffuse edema of the brain. One fetus died in utero five minutes after the third injection. Within two minutes after the injection the fetal heart began to slow, and it gradually became weaker and weaker until it completely stopped. All of these stillborn infants died in the first stage of labor. Prior to our use of caudal anesthesia we had only 1 full term stillbirth in 1,200 cases at this clinic. In the metycaine series of 500 cases we had 4 full term normal stillbirths. All of these fatalities were of babies who were alive when the patient entered the hospital, the deaths occurring during labor and before delivery. This is a small series of cases and no definite conclusions can be drawn, but it is our impression that these deaths were caused by the drugs used. Work is now in progress at this clinic which we believe will substantiate this theory. Since less fetal distress was noted in the procaine series, we believe that procaine is a safer and less toxic drug from the standpoint of the baby than any other drug used.

COMPLICATIONS

The complications attending this type of anesthesia may be grouped under five separate headings: (1) infection, (2) injection into the subarachnoid space, (3) circulatory collapse, (4) sensitivity to the drug used and (5) miscellaneous.

Infection is the most serious of these complications. Up to the present time the only death reported from this anesthesia has been that of Hingson and Edwards,[4] from infection in the caudal area. We have had 2

4. Hingson, R. A., and Edwards, W. B.: Continuous Caudal Analgesia, J. A. M. A. **123**: 538 (Oct. 30) 1943.

such infections, 1 of which completely cleared up with sulfonamide therapy. In the other a laminectomy was performed and the patient was found to have an arachnoiditis. Adhesions were broken up and nerve roots freed. She is gradually recovering bladder function and the use of her legs, but the prognosis is guarded. The importance of rigid aseptic technic cannot be stressed enough, for this is the only method by which infection can be prevented. In addition, the location of the injection should be very carefully prepared. We advocate the use of soap and water followed by alcohol and ether; the part is then painted with an antiseptic solution. If an infection does occur, it is important that early treatment be instituted. If treated early, through and through drainage with large needles inserted into the sacral foramens and into the caudal canal is the method of choice. As an adjunct, massive doses of a sulfonamide by mouth should be given. If penicillin is available, it may be substituted as the irrigating agent. Should this method not bring the infection under control, a laminectomy should be performed with complete open drainage.

Injection into the subarachnoid space is a danger which can be avoided when certain precautions are taken. If the small indwelling needle is used, a test dose of 8 cc. of solution should be used prior to each injection, as outlined by Gready.[5] It is unsafe to depend on aspiration to ascertain whether the dura has been entered. The test dose should be given before each injection, because the needle may slip in and out or move from side to side and become lodged in the dura between injections. In addition to this precaution, the test developed by Block and Rotstein [6] in conjunction with the continuous drip method is of value.

If the indwelling catheter is used, the aspiration technic is of more value, owing to the larger lumen of the needle. We have used this technic in our cases. In 1,200 cases we have penetrated the dura three times. In these cases aspiration immediately produced spinal fluid. In the last 600 cases we have used continuous drip caudal anesthesia after the method of Block and Rotstein,[6] using their drip test in addition to aspiration to determine the position of the needle. When the dura is penetrated, the needle should be withdrawn and the labor managed by some other method. In the event a large quantity of solution is injected into the subarachnoid space, treatment should be instituted immediately. The following measures are advocated:

1. Forced spinal drainage through a large spinal needle.
2. Semi-Fowler's position.
3. Inhalations of 95 per cent oxygen.
4. Artificial respiration if necessary.

Circulatory collapse has become a minimal danger in our clinic. This has been alleviated by premedication with ephedrine 3/8 grain (0.024 Gm.) and seconal 1½ grains (0.1 Gm.). We also use 5 minims (0.3 cc.) of epinephrine to each hundred cubic centimeters of anesthetic solution. If the systolic pressure falls below 100 mm. of mercury, it is advisable to give ephedrine 3/8 grain subcutaneously or intravenously. This is necessary in only a small percentage of cases. The epinephrine in the anesthetic solution by its vasoconstricting action delays the absorption of the agent and thus prolongs its action locally. This to some extent prevents the sudden fall of blood pressure incident to induction of caudal anesthesia and hence contributes to the well-being of the patient and prevents much of the nausea and vomiting.

No toxic reactions have been obtained which could be attributed to drug sensitivity. Cases of convulsions and sensitivity reactions have been reported from other clinics. For this reason it is our practice to premedicate all our patients with one of the barbiturates. Sodium amytal for intravenous use should be kept in the labor room at all times and given immediately if any symptom of sensitivity is noted.

Bladder Dysfunction.—Only 4 per cent of our 600 patients who were given procaine hydrochloride required catheterization after delivery. Two per cent of this series required catheterization more than once. Of 500 patients managed with metycaine hydrochloride 15 per cent had to be catheterized after delivery and 5 per cent of these required catheterization more than once. Three patients in this series did not void spontaneously for over two weeks, and it was necessary to catheterize 1 over a four week period. In both the procaine and the metycaine series the solutions were prepared in the same way; that is, 1.5 per cent solution in isotonic solution of sodium chloride. It is our impression that this difference in the incidence of bladder dysfunction is another indication of the greater toxicity of metycaine. The bladder should be emptied before anesthesia is started and distention avoided throughout labor.

Headaches.—Three per cent of our patients complained of mild headaches at the base of the skull after several hours of anesthesia. These were all transient, and there were no cases in which chronic headache developed post partum.

Nausea and Vomiting.—Before we used the continuous drip technic, 25 per cent of our patients experienced nausea and vomiting during the anesthesia. Since the change to the continuous drip method, the incidence of nausea and vomiting has been only 10 per cent. We attribute this to decreased pressure in the caudal canal when the continuous drip method is used. It will be impossible to alleviate these symptoms completely, as it is well known that the patients under any type of analgesia will have nausea and vomiting during the course of labor.

Backache.—Backaches were observed in 5 per cent of our patients, but these were transient and no chronic backaches developed post partum. Most of the backaches observed were in those patients who were allowed to stay in one position for too long a period. The patient's position should be changed every thirty minutes during the anesthesia. This calls for constant and careful nursing care.

In 1,200 cases managed with continuous caudal technic there has been no maternal mortality.

COMPARISON OF METHODS

Indwelling Catheter Method.[7]—Advantages:

1. There is less trauma to the caudal canal, owing to a flexible catheter which will not tear blood vessels and structures in the canal.

2. The patient is more comfortable; she may move from side to side with impunity or may lie on her back with no fear of breakage or trauma.

5. Gready, T. G., Jr.: Some Complications of Caudal Anesthesia and Their Management, J. A. M. A. **123**: 671 (Nov. 13) 1943.

6. Block, N., and Rotstein, M.: Continuous Drip Caudal Anesthesia in Obstetrics, J. A. M. A. **122**: 582 (June 26) 1943.

7. Manalan, S. A.: Caudal Block Anesthesia in Obstetrics, J. Indiana M. A. **35**: 564 (Oct.) 1942.

3. There is less chance of infection, owing to the fact that the catheter is sealed in place with waterproof tape so that discharges cannot reach the site of injection.

4. Patients are easier to handle; it is not necessary to keep them in any one position and they may be moved into any position without fear of breakage or trauma.

5. Unilateral anesthesia is nil, as it is not necessary to keep the patient on her side throughout labor.

Disadvantages:

1. Technical: It has been reported that in other clinics some difficulties have arisen in inserting the 15 gage needle through the sacral hiatus. We have had only 4 cases in which it was impossible to insert the needle into the canal.

2. Trauma: With the use of the 15 gage needle more trauma is experienced by the soft tissues, but this is more than compensated for by the insertion of a flexible catheter for the duration of labor.

Indwelling Needle Technic.—Advantages:

1. There is less trauma to the soft tissues, owing to the insertion of a smaller needle.

2. It is simple. The needle is inserted and left in place.

Disadvantages:

1. There is needle breakage.

2. The needle may slip out of place either into the dura or completely out of the canal.

3. The patient must be kept on her side all during labor, which is uncomfortable for the patient and difficult for nursing care.

4. More chances exist for infection, as it is impossible to seal the needle in place and to keep it from slipping in and out of the canal.

5. More trauma occurs to the caudal canal, as with each movement of the hub of the needle the point will sweep through a large arc, which may tear blood vessels and even the dura.

6. There is increased incidence of unilateral anesthesia, as the patient must be kept on her side throughout labor.

Indwelling Catheter Technic.—1. The patient is placed on her right side in a modified Sims' position and close to the side of the bed.

2. The lumbosacral region is scrubbed with soap and water followed by alcohol and ether. Tincture of merthiolate then is applied to the region and sterile drapes are put in place.

3. Procaine hydrochloride 1.5 per cent solution is prepared by adding the contents of two 5 cc. ampules of 20 per cent procaine hydrochloride to 125 cc. of sterile isotonic solution of sodium chloride.

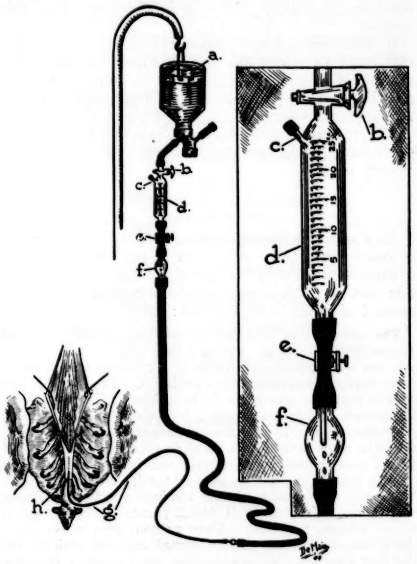
4. A skin wheal is raised over the sacrococcygeal ligament. A 15 gage needle is passed through the skin wheal and is advanced through the sacrococcygeal ligament. After the tip of the needle comes in contact with bone on the anterior border of the caudal canal, the needle is rotated 90 degrees to bring its bevel against the bone. The hub is depressed and the needle is then advanced about 1 inch (2.5 cm.). A glass syringe containing 25 cc. of the anesthetic solution is attached to the needle and 1 or 2 cc. of the anesthetic solution is injected to clear the needle of any obstruction. The plunger is withdrawn gently in order to make sure that the tip of the needle is not lying within the lumen of a blood vessel or within the subarachnoid space. Twenty-five cc. of the anesthetic solution is then injected slowly into the caudal canal.

5. As soon as the initial dose has been injected the syringe is detached from the needle and a No. 4 French nylon ureteral catheter which has been sterilized in an autoclave is passed through the needle and is advanced until the tip of the catheter is approximately 1½ inches (3.8 cm.) above the sacral hiatus; the needle is then removed over the catheter.

6. The catheter is padded with sterile gauze at the point of entrance into the skin and brought over the patient's back to her flank, and the entire region is sealed with waterproof adhesive tape to prevent soiling from the perineum.

7. The patient may now be turned on her back and made comfortable in any position that she desires.

8. A continuous drip is attached to the catheter and is set to deliver 20 cc. per hour. If at the end of an hour the level of anesthesia is too high or too low, the drip may be either increased or decreased proportionately.



Apparatus: *a*, main reservoir; *b*, stop cock; *c*, air vent with filter; *d*, graduated glass cylinder with regulation clamp to regulate number of drops per minute; *f*, vacuum drip; *g*, nylon number 4 ureteral catheter; *h*, sacral hiatus.

The gravity apparatus used at this clinic is a modification of that used by Block and Rotstein.[6] A glass cylinder graduated in cubic centimeters is interposed between the drip and the main reservoir containing the anesthetic solution. This cylinder receives the solution from the main reservoir and subsequently delivers it to the drip. At hourly intervals 15 to 25 cc. of the solution, depending on the level of the patient's anesthesia, is turned into the cylinder. During the succeeding hour the cylinder is slowly emptied by the gravity drip and the solution is allowed to run into the caudal canal. By using this modification it is possible to combine the advantages of the multiple injection method with that of the gravity method. A definite amount of solution may be given at required intervals and yet may be given slowly by gravity, as shown in the illustration.

We prefer the use of the continuous drip for the following reasons:

1. Placement of the catheter in the soft tissue overlying the sacrum is easily detected, since pressure over the sacrum stops the flow of the anesthetic agent through the drip apparatus.

2. Chance of infection is decreased, owing to a completely closed system.

3. It is the most simple type of apparatus.

4. The level of anesthesia is relatively constant. With other methods the level of anesthesia is constantly rising and falling.

5. There are reduced volume of agent and pressure in the caudal canal, which, together with the constant level of anesthesia, we believe accounts for the decreased incidence of nausea and vomiting obtained with this method.

6. The total amount of anesthetic used is less. In our 600 cases in which the drip method was used, the amount of solution used per hour to keep the level of anesthesia at the umbilicus was 25 per cent less than in our previous series.

7. Our modification makes it possible to obtain all the advantages of both the multiple injection and the gravity method.

CONTINUOUS CAUDAL ANESTHESIA IN ECLAMPSIA

In a previous communication we [8] reported the use of continuous caudal anesthesia in the management of 3 cases of eclampsia. Since that time we have used this method with similar dramatic results in 2 other cases, 1 of which is summarized:

The patient was admitted to the hospital with a blood pressure of 180 systolic, 100 diastolic. She was not in labor but was within two weeks of term. A history was given of four convulsions previous to admission. The patient had been in coma for approximately three hours. Urinalysis from a catheterized specimen showed a 4 plus reaction for albumin; otherwise results of laboratory examinations were negative. On rectal examination it was found that the head had descended to a 2 plus station and the cervix was effaced and patulous. At this time the membranes were ruptured. Within two hours labor was well established, and continuous caudal anesthesia was started. The patient's blood pressure dropped within twenty minutes to 140/80. About an hour after caudal anesthesia was started the patient reacted and was rational for the first time since admission. The blood pressure remained between 140 and 150/90 throughout the entire course of labor, which lasted eight hours, and was delivered of a normal living child. The caudal anesthesia was continued for eight hours after delivery, after which sedation was used. She had no recurrence of convulsions, and both mother and baby made an uneventful recovery.

In eclamptic patients the blood pressure should be watched closely, as a large drop in blood pressure is the rule.

CONCLUSIONS

1. Continuous caudal anesthesia is a valuable part of the armamentarium of the obstetrician. It should not be forgotten that other methods of analgesia are valuable and should be used in conjunction with continuous caudal anesthesia when circumstances warrant it.

2. Continuous caudal anesthesia should be used only by a competent obstetrician, as its use necessitates a larger percentage of operative deliveries and increases obstetric complications if not properly used.

3. Operative deliveries are greatly facilitated by the complete relaxation of the perineum.

4. It is my impression from clinical observation that certain babies become toxic from the drugs used and show fetal distress. The fetal heart rate should be checked frequently during labor, and at the first sign of distress the anesthesia should be discontinued or labor terminated.

5. It has been my experience that procaine hydrochloride will give the desired results with less toxicity to both the mother and the baby. Therefore I see no reason for using a more toxic drug.

6. Babies born under continuous caudal anesthesia are awake at birth and need no resuscitation. This is one of the greatest advantages of continuous caudal anesthesia.

7. Continuous caudal anesthesia has proved to be of value in the management of eclampsia. Five cases have been managed in this clinic with no fetal or maternal mortality.

8. Continuous drip administration has in our hands proved to be the greatest technical advance introduced in continuous caudal anesthesia.

9. All patients should be premedicated with a barbiturate. In addition it is advisable to premedicate each patient with 3/8 grain (0.024 Gm.) of ephedrine to alleviate the possibility of circulatory collapse.

10. The indwelling ureteral catheter technic is safer, less traumatic and more comfortable to the patient.

11. Absolute asepsis must be observed at all times.

TERMINAL CAUDAL ANESTHESIA IN OBSTETRICS

A REVIEW OF 800 CASES

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The introduction in recent years of caudal block as a method of obstetric anesthesia and, in particular, the extensive publicity given it have aroused considerable controversy as to its proper position in obstetric practice and its adaptability to general use.

That caudal anesthesia is of real value cannot be denied, and that it warrants continued clinical investigation to reveal completely its already established merits and potentialities is a foregone conclusion. Solution of the problem will come with widespread knowledge of the technical details of the procedure and from repeated critical reviews of clinical results in a sufficiently large number of cases to allow for accurate statistical analysis and interpretation. It is with the purpose of providing additional data that this summary of 800 cases of terminal caudal anesthesia seeks its justification.

This series of 800 cases of terminal caudal anesthesia was begun in the obstetric department of the Milwaukee County Hospital in 1939 by Lahmann, Mietus and Mitchell and was continued by succeeding house physicians.

CASES

This group is composed principally of primigravidas (722 cases) with the addition of some multiparas (78 cases) for whom operative procedures were indicated. The extent of anesthesia was sufficient to permit its

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employment in a wide variety of obstetric procedures varying in complexity from cesarean section (20 cases) to spontaneous birth. Seventy-eight women (16 multiparas and 62 primiparas) were allowed to deliver spontaneously, indicating that caudal anesthesia does not preclude spontaneous delivery or necessarily require operative intervention. The most frequently employed operative maneuver was the application of low outlet forceps and episiotomy, performed in 626 cases. Midplane forceps were applied in 24 cases. This preponderance of forceps deliveries is not necessarily related to the type of anesthesia used but merely reflects the policy of our obstetric department, which is to use prophylactic outlet forceps routinely on all primigravidas. The spontaneous deliveries in this series constituted a test of the efficiency of the method under those circumstances and included a number of patients who were able to deliver spontaneously without either knowledge of their progress or any voluntary expulsive efforts on their part. The remainder required the assistance of the abdominal musculature during uterine contractions, as indicated to the parturient by the operator, who held his hand on the abdomen of the mother.

Among the operative cases were 42 breech extractions, 40 transverse application of blades, 26 posterior blades, including rotation, by one of several standard technics, 3 versions and extractions and the single insertion of a metreurynter. In all these instances the anesthesia provided excellent relaxation of the pelvic floor, permitting a wide range of maneuverability and ease of application of instruments. A number of patients in whom a serious disease existed, 7 cardiac, 5 suffering from pulmonary tuberculosis and 7 with toxemia, were delivered without untoward incident, further evidence of the general safety of this method.

ANATOMY AND PHYSIOLOGY

The technic employed was constant; a single injection method of terminal anesthesia was used in all cases. Continuous caudal anesthesia was not attempted, and no comparison of the two methods is considered here. The basis of the method lies in the anatomic structure of the sacral canal, which provides an easily available site for the injection of the anesthetic agent into the epidural space about the sacral and lumbar nerve roots. This canal—a continuation of the spinal canal—terminates posteriorly and caudally in a hiatus formed by the defective fusion of the last sacral laminas and covered only by the sacrococcygeal membrane, subcutis and skin. This hiatus varies in size from a thumbnail to a mere dehiscence between the laminas but in most instances can be palpated as a triangular depression, marked at the apex by the spinous process of the fourth sacral vertebra and laterally by the prominent cornua of the fifth sacral vertebra, all of which can be identified by the method to be described. The epidural space at this point is occupied by vascular, adipose and areolar tissue, as well as the ensheathed sacral and lumbar nerves, and extends anteriorly (or cephalad) for a sufficient distance to provide a considerable margin of safety for insertion of the needle, without undue fear of dural puncture and massive spinal anesthesia. The dural sac usually terminates at the level of the second sacral vertebra. The remainder of the epidural space, which terminates superiorly with the insertion of the dural sac around the foramen magnum, is only a potential cavity, lying between the endosteum of the vertebrae and the dura mater. It is into this potential space that the anesthetic dissects its way to bathe nerve roots at higher levels when the quantity of anesthetic is in excess of that which can be conveniently accommodated in the sacral canal. Thus it can be seen that the duration of anesthesia remains for the most part an inherent property of the drug, whereas its effective radius depends on the quantity of agent used.[1]

TECHNIC

The procedure followed at the Milwaukee County Hospital requires no special equipment and utilizes material easily available. Since a single injection terminal anesthesia is used, the injection is not given until the presenting part is just visible at the introitus: a time when the primigravida requires one and one-half to two hours of strenuous labor before delivery is effected. The patient assumes either a knee-chest or a left-lateral recumbent position; the sacrococcygeal area is cleansed with soap and water; an antiseptic

Diagrammatic representation of the lower end of the spinal column, showing the levels to which the spinal cord and dural sac usually descend and the area into which the anesthetic agent is placed.

tincture (iodine) is applied and removed with alcohol; the sacral hiatus is located by the method to be described; a number 19 gage spinal tap needle of the usual type is inserted into the hiatus and thence into the sacral canal and tested for possible penetration into blood vessels or subdural space. Forty cc. of a 2 per cent solution of metycaine is injected slowly (the patient frequently experiencing cramps in her legs); the needle is withdrawn and the patient prepared for delivery.

These successive steps warrant more detailed discussion for the purpose of clarification and differentiation from other variations in use elsewhere:

1. It should be noted that specific preoperative medication directed against the caudal injection is omitted. There is a difference of opinion as to its desirability. Campbell [2] advises the preoperative use of a barbiturate as a prophylactic agent against possible toxic effects of the anesthetic. Pritchard [3] recommends 1½ to 3 grains (0.1 to 0.2 Gm.) of pentobarbital sodium one-half

1. Thompson, J. E.: An Anatomical and Experimental Study of Sacral Anesthesia, Ann. Surg. **66**: 718 (Dec.) 1917.
2. Campbell, W. C.: Sacral Block and High Caudal Block Anesthesia, Proc. Staff Meet., Mayo Clin. **10**: 607 (Oct. 16) 1935.
3. Pritchard, W.: Caudal Anesthesia, J. Urol. **46**: 514 (Sept.) 1941.

hour before the injection. Hopp,[4] using the same anesthetic (procaine hydrochloride), states that he has seen fewer reactions when no premedication was used. In our experience with metycaine, although morphine, scopolamine and the barbiturates were occasionally given very early in labor for obstetric amnesia and analgesia, no specific medication was employed against possible toxic effects of the metycaine. Toxic complications were outstanding by their absence, indicating that barbiturate premedication is not essential.

2. In regard to the position (preparatory to injection of the anesthetic), the patient is obviously much more comfortable in a left-lateral recumbent, with legs moderately flexed, than in an awkward knee-chest position. In the former, however, the shifting of the soft tissues may make the palpation of the sacral hiatus more difficult and confusing and may lead to many failures. In this regard it should be emphasized that the bony landmarks alone, and not the gluteal fold or any other soft parts, should be used to identify the sacral hiatus. The knee-chest position, since there is less anatomic distortion, favors the less experienced operator by accentuating the landmarks.

3. Preparation of the site of injection is reduced to the simplest form consistent with the avoidance of infection. The ordinary precautions just listed are employed. The operator scrubs for three minutes. Nor have we found it necessary to use elaborate measures of protection subsequent to withdrawal of the needle. No infections of any kind were seen in this series. We would not care to go on record as implying that laxity or carelessness is to be condoned, but what we are trying to say is that the method is not so technically complex that heroically guarded measures must be instituted.

4. Palpation of the sacral hiatus varies in difficulty. The method of Haines,[5] utilizing an equilateral triangle, the base of which represents a line drawn between the posterior superior iliac spines and the apex then falling on the sacral hiatus, is undoubtedly of value, particularly in obese patients, but has proved cumbersome in our hands. A simpler method, which we have found to be satisfactory, consists in placing the tip of the index finger of the left hand on the end of the coccyx and allowing the finger to fall back on the spinal column. The sacral hiatus is then identified as a depressed triangle in the region of the middle of the first phalanx of the index finger. The hiatus identified, the patient is told that she will feel a little needle prick, and the needle is quickly and expeditiously forced through the cutis at the level of the lateral cornua, the sacrococcygeal membrane penetrated, the hub of the needle depressed 45 degrees and the needle advanced for about 3 centimeters into the canal.

5. Although cutaneous and subcutaneous infiltration with an anesthetic are recommended by many,[6] we consider it to be unnecessary, as the discomfort accompanying penetration with the caudal needle when done deftly and with dispatch is of little moment. Aside from obscuring the palpable landmarks and rendering an essentially simple procedure technically complex in addition to predisposing to local infection because of the added tissue trauma, preliminary infiltration accomplishes little. There is no doubt in our minds that there is a relationship between our abstinence from local infiltration and the absence of any infection in our series. In our opinion, preliminary infiltration is entirely unnecessary and should be relegated to superfluity.

6. Once the needle is in position, it must be tested for possible penetration of a vein or the subdural space. The first is heralded by the aspiration or appearance of blood and requires merely the adjustment of the position of the needle or, occasionally, withdrawal and reinsertion. Puncture of the dura is immediately apparent because of the release or aspiration of cerebrospinal fluid. This necessitates the abandonment of the procedure, since the anesthetic may seep from the epidural into the subdural space by way of the dural puncture, producing a dangerously massive spinal anesthesia. It is our impression, however, that the danger of entering the dural sac via the sacral canal has been greatly overrated. This series has not been marred by any broken needles or by the penetration of any dural sac. We are ready to admit that penetration of the dural sac is certainly within the realm of possibility, particularly in those instances in which the dural sac extends to an abnormally low level. However, should penetration of the dural sac occur in an unusual case, this fact would become apparent at once by the appearance of cerebrospinal fluid when the stilet of the needle is withdrawn, just as it occurs anywhere along the spinal column when penetration of the dura is effected. Entrance of the needle into the subarachnoid space via the sacral canal is not only unlikely, but, should it occur, there would be nothing occult or mysterious about its presence there. It is for this reason that we do not subscribe to the preliminary injection of 8 cc. of anesthetic agent into the sacral canal as advocated by others[7] to see whether or not spinal anesthesia develops. This is merely another unnecessary step which is serving to make an essentially simple technic cumbersome. Thus the simplest precautions furnish ample security.

ANESTHETIC

Metycaine was the anesthetic used in our entire series. This drug was preferred to others of a similar nature because of its greater efficacy, rapidity and dependability of action and its somewhat lesser degree of toxicity. The average dose was 40 cc. of a 2 per cent solution. A 2 per cent solution was used rather than the 1.5 per cent solution because of its greater penetrability and the consistency of results obtained. Hopp[4] points out that the nerves passing through the epidural space are covered by an usually thick dural sheath, and an anesthetic, to be effective, must be of sufficient concentration to penetrate the sheaths not only near the hiatus but also those at higher levels. The quantity of solution used is calculated to reach the level of the tenth thoracic nerve. Since the solution extends into the canal only by mechanical dissection of the adipose and areolar tissue of the epidural space, the position of the patient does not affect it, and it is entirely within the control of the operator. Grodinsky[8] demonstrated that 40 cc. of fluid would generally occupy

4. Hopp, E. S.: Painless Labor—Caudal Block in Obstetrical Anesthesia, Mil. Surgeon **89:** 675 (Oct.) 1941.

5. Haines, W. H.; Mumey, N., and Faber, E. F.: Caudal Anesthesia in Urology: New Method for Locating Sacral Hiatus, Internat. Clin. **2:** 85 (June) 1924.

6. Adams, R. C.; Lundy, J. S., and Seldon, T. H.: Continuous Caudal Anesthesia or Analgesia, J. A. M. A. **122:** 152 (May 15) 1943. Manalan, S. A.: Caudal Block Anesthesia in Obstetrics, J. Indiana M. A. **35:** 564 (Oct.) 1942.

7. Hingson, R. A., and Edwards, W. B.: Continuous Caudal Analgesia in Obstetrics, J. A. M. A. **121:** 225 (Jan. 23) 1943.

8. Grodinsky, M., and Best, R. R.: Sacral Anesthesia: An Experimental and Clinical Study, J. Urol. **22:** 187 (Aug.) 1929.

the epidural space to the level of the seventh to tenth thoracic nerve. He injected dissecting room cadavers epidurally, through the sacral hiatus, with a 1 per cent aqueous solution of methylene blue and compared the levels to which the stain ascended with the levels of anesthesia obtained when an equal quantity of 1 per cent procaine was injected similarly into the living subject. The hypesthesia and hypalgesia in the 40 cc. procaine injections reached to the level of the eighth or ninth thoracic vertebra, and the stain in the 40 cc. cadaver injections reached an almost similar level. At the level of the eleventh, all sensory impulses from the uterus and perineum are blocked. Epinephrine was scrupulously avoided, since it has been shown that this drug not only causes the uterine musculature to relax, thus predisposing to postpartum hemorrhage, but also inhibits uterine contractions.[9] It is our belief that less so-called toxic effects attributed to metycaine will be encountered if epinephrine is avoided.

RESULTS

From the standpoint of anesthesia obtained, we have considered as successful those cases in which there was complete freedom of all uterine, perineal and traction pain and in which there was no limitation of obstetric manipulation. Of the total of 800 cases, 710 (88.8 per cent) fell into this category of completely successful anesthesia. The remaining 90 cases (11.2 per cent) were either completely or partially unsuccessful and fell into one of the two following groups:

In 36 cases (4.5 per cent) there was failure to obtain any anesthetic action whatever from the injection.

In 54 cases (6.7 per cent) there were partial failures of various types.

Complete failures were ascribed solely to faults in technic, possibly justified in some instances by anomalies in the anatomic structure of the sacrococcygeal area. Those instances in which the needle very visibly failed to find its mark and in which, therefore, no material was injected are also included as complete failures. The partial failures included those cases in which the anesthesia was incomplete. Some of these patients obtained only unilateral anesthesia (unrelated to the position of the patient); others developed perineal anesthesia but retained perception of uterine pain, and in some the reverse was true. These bizarre effects are not easily explained. Some may be due to the fact that the anesthetic agent never entered the sacral canal but merely bathed a few nerve filaments after they had emerged from the canal. Some may be due to the fact that the anesthetic agent, although present in the canal, was mechanically inhibited from reaching the nerves. Others may have their basis in peculiarities in the anatomy of the sacral canal. An opinion which we have shared for a long time which might explain unilateral anesthesia concerns itself with a greatly hypertrophied filum terminale, which by dividing the caudal canal into two sections mechanically prohibits the metycaine from reaching both sides.

The time of onset of anesthesia varied from three to fifteen minutes, and the patient was ready for delivery within ten to fifteen minutes. The average duration of the anesthesia (measured in the first 600 cases) was one hour and twenty-nine minutes. Anesthesia extended to the umbilicus in most instances.

9. Rucker, M. P.: Action of Adrenalin on Pregnant Human Uterus, South. M. J. **18**: 412 (June) 1925.

COMPLICATIONS

Anesthetic complications were few. Except for a temporary drop in arterial tension of 20 to 30 millimeters of mercury, systolic, which was seen in the majority of patients, the total number of side reactions did not exceed 4 per cent. These consisted of transient disorientation, nausea, vomiting, blurring of vision and convulsions. All were so evanescent in nature that there was scarcely sufficient time to institute therapy. Only 6 of the convulsive cases were prolonged (one or two minutes), and these responded quickly to carbon dioxide-oxygen mixture and ephedrine. There were no delayed complications. The transitory nature of these reactions leads one to suspect that they may be based on the sudden increase in intraspinal pressure occasioned by the too rapid injection of the solution rather than on any specific toxic effect of the drug. It has been shown repeatedly that the central nervous system does not readily tolerate sudden changes in cerebrospinal fluid pressure. The convulsions may perhaps be explained by the transmission of an increased cerebrospinal fluid pressure from the caudal portion of the dural sac to the higher centers. This would occur in those instances in which the caudal canal was small and when the anesthetic agent found temporary difficulty in dissecting its way upward. Under these circumstances the rapid injection of the anesthetic agent would result in pressure against the dural sac, which would then be transmitted along the cerebrospinal fluid to the upper centers. As the drug begins to dissect its way upward, between the periosteum and the dural sac, the pressure in the caudal canal is rapidly dissipated and the convulsion ceases. Because of the transient nature of these seizures we feel that sensitivity to the drug, or inadvertent intravascular injection of the anesthetic agent, though extremely dangerous, is of little or no etiologic significance in regard to the convulsions. Sensitivities endure longer, and toxic substances within the vascular tree require greater time for detoxification.

The condition of the parturient subsequent to delivery illustrates many advantages of the method. The retention of the motor impulses causes the uterus to remain in excellent tonus, so that it contracts rapidly and firmly, providing prompt and ready placental separation and reducing postpartum hemorrhage to a minimum. This paucity of bleeding is remarkably evident not only during delivery from below but also at cesarean section. Involution is unaffected, proceeding normally. The absence of respiratory depression and irritation such as may accompany the use of inhalation anesthesia eliminates the fear of postanesthetic pulmonary complications. Likewise the exclusion of the central nervous system from the action of the drug removes that source of excitation. Since nausea and vomiting are not anticipated under caudal anesthesia, fluids, carbohydrates and the like can be given in adequate quantities by mouth before, during and immediately subsequent to delivery. Should vomiting occur, as it does in a very small percentage of cases, the situation is easily managed, since there has been no accompanying depression of any of the respiratory reflexes. As the dural sac is not entered, the severe headaches occasionally seen in spinal puncture do not occur. The patient herself is completely relaxed, composed and reassured following her complete relief from pain. The operator is not hurried, as he is assured of approximately ninety min-

utes of anesthesia following the injection. This is of distinct advantage, particularly in teaching institutions, because a sufficient amount of time exists for instruction, demonstration and practice without the danger of jeopardizing the health of the mother or child because of prolonged anesthesia. This is hardly possible under other forms of anesthesia.

Although most of the disadvantages of the method are largely technical, there are a few obstetric situations in which caudal anesthesia is not the anesthetic of choice. The continuation of the motor impulses to the uterus may occasionally serve as an impediment to internal podalic version, although the two are by no means mutually exclusive. Patients moderately exsanguinated because of placenta previa or abruptio placentae do not tolerate the drop in vascular tension incident to the injection. The use of caudal anesthesia in patients suffering from a toxemia of pregnancy accompanied by hypertension is questioned. We have seen several toxic patients with hypertension go into so-called peripheral vasomotor collapse as the result of a precipitous fall in blood pressure following the injection. Anatomic abnormalities of the sacrococcygeal region, either acquired or congenital, may make the injection technically difficult or impossible. Certainly the injection should not be undertaken in the face of infection in this region. Necessity for immediate delivery may contraindicate its use.

The effects on the infant are nil. Nine stillbirths occurred in this series, all of which could be decisively attributed to causes other than the anesthetic. The promptness of onset of respiration is convincing evidence of the benignity of the method.

CONCLUSIONS

1. In 88.8 per cent of 800 cases of terminal caudal anesthesia in obstetrics completely successful anesthesia was obtained; 11.2 per cent were either partial or total failures. The average duration of the anesthesia (measured in 600 cases) was eighty-nine minutes.

2. Immediate anesthetic complications were few and transient; the puerperium was in no case marred by any untoward events attributable directly or indirectly to the anesthetic.

3. The effects on the infant were nil.

4. The possibilities of dural penetration, massive spinal anesthesia or broken needles are minimal. With simple precautions such accidents have never occurred in our series.

5. No indications for specific medication directed against possible toxic effects of metycaine were noted.

6. No infections of the sacral area were encountered.

7. Preliminary skin infiltration was avoided, as it was considered unnecessary and a potential factor in infection.

8. Terminal caudal anesthesia in obstetrics is of real value. Its use should be restricted to those who are willing to take time to learn the method completely. Such instruction will be rewarded by a very minimum of failures and complications. It will put an end to the unjust criticisms occasionally leveled at the method, which spring, in reality, from the operators' inadequacies rather than from any inherent fault in the procedure and will allow caudal anesthesia to take its legitimate and deserved place in the field of obstetric anesthesia.

CONTINUOUS CAUDAL ANALGESIA IN OBSTETRICS

THREE HUNDRED CASES

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Since the original publication by Hingson and Edwards [1] in September 1942 a number of papers on continuous caudal analgesia have appeared. Most of these experiences have been reported from metropolitan or large service hospitals well staffed by residents and interns. The cases reported here have been cared for by one person in a general hospital of 200 beds without any resident staff.[2]

The history of the development of caudal analgesia has been thoroughly covered in other publications. Briefly, it combines the original caudal analgesia of Cathelin [3] (1901) with the continuous or fractional method which Lemmon [4] applied to spinal (subarachnoid) anesthesia in 1939. By utilizing the feature of fractional injections, one is able to reach practically any level in the peridural space. Thus the peridural anesthesia of Dogliotti [5] is achieved with the needle firmly and safely held in the sacrococcygeal ligament.

At this date no one with any knowledge of the subject doubts the possibility of relieving labor pains by means of caudal analgesia. There are, however, a number of questions which arise as to how practical its use may be in an institution of average size. My experience since Oct. 3, 1942 with this method leads me to answer the foregoing questions as follows:

1. *When is the method indicated and may it be practically and safely applied without a full time physician anesthetist?*

(*a*) Continuous caudal analgesia is indicated when there are strong, regular, painful uterine contractions every three to five minutes (in the primipara) with progressive dilatation of the cervix. If started much earlier than this the relief is not as greatly appreciated, since the patients lie in relatively the same position and become restless after too great a time. My experience parallels that reported by others; i. e., the best results are those over a period of seven hours or less. In multiparas, caudal analgesia may be started as soon as the pains become difficult for the patient to bear; following its administration, dilatation seems to be hastened and delivery ensues rapidly. A number of patients have been kept free from all pain for a much longer period than stated, but this time may be said to be the optimum.

(*b*) Consistent success with the method naturally depends on the extent of one's experience. In the early cases there are many "unexplained" failures. As pointed out by Hingson and Edwards, previous experience with single injection caudal anesthesia is highly desirable. I had no such experience but was greatly aided by having worked with spinal and particularly continuous spinal anesthesia. Recent dissection of the

1. Edwards, W. B., and Hingson, R. A.: Continuous Caudal Anesthesia in Obstetrics, Am. J. Surg. **57**: 459, 1942.
2. Memorial Hospital, Cumberland, Md.
3. Cathelin, F.: A New Route of Spinal Injection: A Method for Epidural Injections by Way of the Sacral Canal; Application to Man, Compt. rend. Soc. de biol. **52**: 453, 1901.
4. Lemmon, W. T., and Paschal, G. W., Jr.: Continuous Spinal Anesthesia, Pennsylvania M. J. **44**: 975, 1941.
5. Dogliotti, A. M.: Anesthesia, translated by C. S. Scuderi, Chicago, S. B. Debour, Publishers, 1939, p. 521.

region of the sacral canal and lower lumbar region are most helpful in thoroughly understanding the anatomy involved. Routine examination of the sacral hiatus of all patients is the easiest means of becoming familiar with this very important landmark.

The method is not one to be used occasionally for "special" patients who request it because they have read of it in some lay publication. It requires constant usage, and one must be prepared to accept failures. Obviously there is no substitute for experience, but one is greatly aided by observing the method in the hands of those already familiar with it.

All patients in this series were watched by a graduate nurse during the course of their analgesia. The physician was available at all times, all patients being in the same hospital. With the exception of the first 3 patients, the majority of the injections after completion of the induction period of analgesia were given by the nurse. All the last 80 patients in this series were under the constant observation of one nurse especially trained in the method. Aside from the increased percentage of completely satisfactory results, the relief of the burden from the physician is incalculable. I do not imply that just any individual is suited to care for these patients any more than one would choose any one person as one's regular scrub nurse in the operating room. I am quite in accord with the feeling that, ideally, the patient should be under the constant observation of the physician anesthetist; but when this is impossible, the present alternative is very practical in our hands.

2. *What is the technic employed and how are the patients chosen?*

(*a*) I have used the technic devised and improved by Hingson and Edwards [6] for all but 5 patients. At present the 19 gage flexible caudal needle devised by them provides an instrument which is easy to insert with the minimum of trauma. Prior to its use venipuncture was common, and a few patients complained of persistent tenderness over the site of puncture. At present only a few patients complain of this tenderness, and venipuncture is definitely lessened; unquestionably some of the lessening of these annoyances is due to increased experience. I cannot but feel that a needle of sufficient size to pass a ureteral catheter is more apt to traumatize both veins and other soft tissue.

Recent use of metycaine 1.5 per cent in isotonic solution of three chlorides enables one to expect (1) a shorter induction period (especially important in cesarean sections and other surgical procedures) and (2) decrease in both the total dose and the number and frequency of injections.

The chief difficulty with either the catheter or the needle technic is the proper insertion of the needle into the caudal canal. Any aid in this respect should be welcome. I have been helped especially by the following simple points:

1. Carefully make a superficial skin wheal with 1.5 per cent metycaine directly over the sacral hiatus—it is difficult enough to locate the sacrococcygeal ligament with a needle without the patient "roaming about" from the pain of a needle insertion. Then just as carefully inject 3 to 5 cc. of solution into the lower end of the canal with a 21 gage needle. Allow this needle to remain in position until you are ready with the special caudal needle, fix the skin firmly with the fingers of the left hand, remove the 21 gage needle, and insert the caudal needle in exactly the same point. After this pierces the sacrococcygeal ligament, depress its outer end and slide it into the canal with its bevel as near the posterior bony wall as possible. The needle should be inserted its full length so that there will be no temptation later to insert it farther and unknowingly pierce the dura. The needle should always lie directly in the midline. This will avoid all nerve trunks and minimize the chance obstruction of the needle by the lining periosteum.

2. Gently aspirate for blood or spinal fluid. If the latter is obtained, do not attempt to give the patient caudal analgesia. If blood is aspirated, change the position of the needle by rotation or slight withdrawal until no blood is obtained.

3. In the last hundred patients I have seen no harm and have been greatly aided in determining the proper placing of the needle by the following: After the precautions mentioned, 10 to 20 cc. of air is injected through the needle. If it is properly placed, the sensation is exactly that of injecting air through the needle before it is inserted into the skin; i. e., no resistance whatever. If the needle point is subcutaneous, injected air will balloon the skin more noticeably than will a like amount of fluid. Intravenous injection of air must of course be kept in mind and avoided. I have had no cause to regret this maneuver.

4. Pain or discomfort, "sciatic sign," on rapid initial injection of the anesthetic solution was present in 50 per cent of the last 80 patients. Its presence was always followed by complete analgesia and it was always absent in the "failures," but likewise was not present in almost half of the successful cases.

After the proper placing of the needle, and a ten minute wait following an 8 cc. "test dose" of 1.5 per cent metycaine, there being no signs of spinal anesthesia, 30 cc. of the anesthetic solution is injected slowly. Within five minutes skin anesthesia to pin prick will develop, beginning over the coccygeal area, and progress to the perianal region, the labia and anteriorly to the abdominal wall. Once this "saddle anesthesia" has developed there need be no doubt as to the position of the needle.

(*b*) *Choice of Patient.*—From my experience I suggest that the beginner avoid the patient with an obscure sacral hiatus. Nothing so tends to discredit the method and discourage the operator as "blind" punching." Carefully palpate for the "notch" in all patients and choose those with a readily palpable hiatus. After increased skill and confidence develop, attempt the more difficult cases. I am able to insert the needle in the majority with the patient in the left lateral position, but I do not hesitate to use the knee-chest position if I have difficulty.

If the patient is apprehensive and refuses the method, make no attempt to convince her beyond a rational explanation. In the majority of instances the advent of more severe pains is all the "sales talk" necessary. What is necessary is absolute confidence of the physician in his ability to apply the method to the patient in question; if in doubt, it is better to conduct the labor by other means.

3. *How much relief is the patient afforded and how is the course of her labor modified?*

There is complete relief of all uterine pain in from ten to twenty minutes after the initial injection of 30 cc. of the anesthetic solution. This relief will continue

6. Edwards, W. B., and Hingson, R. A.: Continuous Caudal Analgesia in Obstetrics, J. A. M. A. **121**: 225 (Jan. 23) 1943.

as long as skin anesthesia to pin prick is maintained over the area supplied by the 11th and 12th dorsal nerves (Cleland[7]). Continuous caudal analgesia has the particular advantage of giving complete relief at the time when the pain of uterine contraction would naturally be the greatest. This relief is afforded with no depressing effect on the baby. To see these patients change from a state of extreme discomfort to one of complete relief is most gratifying. Most of the patients doze off as soon as they are free from pain and exhibit no apprehension at being awake during the actual delivery. I have noted a definite general sedative effect in all these patients even before the onset of skin anesthesia at a level necessary to blot out their pain impulses. This has been so constant as to make me feel that it must be due to the general absorption of the drug. In the majority of patients this degree of analgesia may be maintained by injecting subsequent doses of metycaine solution every thirty to sixty minutes, depending on the patient and the level of skin anesthesia. The average dose for each fractional injection is 20 cc.; some will need less, a few may need larger doses.

The rhythmic contractions of the uterus continue without losing their force, and the first stage of labor progresses more rapidly than without anesthesia. In primiparas the second stage is definitely prolonged if allowed to go unassisted. This is due to the loss of desire to bear down with the contractions. As soon as the head is well down on the pelvic floor and in view, I routinely deliver the child with outlet forceps and episiotomy in the primipara. The anesthesia of the perineum is ideal for this procedure and the subsequent repair. The third stage is unusually smooth and on the average greatly shortened if the uterus is left entirely alone. The blood loss in this series averaged about 50 to 80 cc. (estimated).

4. *What are the dangers and how can they be avoided?*

(*a*) *Subarachnoid Injection.*—This is the most serious accident possible and can be avoided always by following a few simple rules: (1) Watch for spinal fluid both as drops from the inserted needle and by repeated, gentle aspiration. (2) Always inject a test dose of 8 cc. of 1.5 per cent metycaine solution and wait a full ten minutes to make certain that spinal anesthesia does not develop. This may seem unnecessary, but an experience like the one here reported is enough to drive the lesson home. If dural puncture occurs, do not attempt caudal analgesia.

CASE 1.—A secundipara aged 23, whose antepartum history was uneventful, was admitted to the hospital with irregular contractions at 10 p. m. March 13, 1943. Pains were regular and more severe at 12:30 a. m., when caudal analgesia was attempted. A 17 gage Lemmon needle was inserted through the sacral hiatus and 30 cc. of 1.5 per cent metycaine injected. The patient experienced relief from pain within five minutes. Fractional doses of 20 cc. were given throughout the night at intervals of from thirty to sixty minutes. Pain returned at 4:15 a. m. and persisted in spite of repeated doses of metycaine. By 9:45 a. m. the patient was complaining of pain in the scapular region with each injection; no relief followed these injections and there was no skin anesthesia of the anterior abdominal wall. The needle was removed at 10:20 a. m. At 10:45 the patient was placed in the knee-chest position and a 17 gage Lemmon needle was inserted into the caudal canal; no fluid dropped from the needle, and 15 cc. of metycaine 1.5 per cent was injected. Immediately the patient became listless and cyanotic. The needle was withdrawn and the patient turned on her back; the heart action was good, with a rate of about 100, and there were no evident respiratory movements. Artificial respiration was instituted at once, both manual and with a respirator and oxygen. Breathing was easily maintained in this manner, the color improved at once and the pulse remained of good quality. Five cc. of nikethamide was given intravenously at 11:10 a. m. The patient began to attempt active breathing at 11:45 a. m. In all, artificial respiration was continued for fifty-five minutes, oxygen being given constantly. By noon she was beginning to regain consciousness; by the time consciousness had sufficiently returned to test for skin sensation (12:30 p. m.) there was complete anesthesia just to the clavicles. The only blood pressure readings observed were 100/70 at 12:25 p. m. and the same at 12:30.

Complete return of consciousness was followed in one hour by very severe, painful contractions. The patient was delivered of a husky girl at 3:32 p. m. Mother and baby had no after-effects.

This accident is avoidable and should never be allowed to occur. The test dose of 8 cc. of solution would have obviated the danger in which this patient was placed; it does not follow that the small dose (equivalent to 120 mg.) will remain as low spinal if accidentally injected subdurally, but it will not result in overwhelming "total anesthesia" as here reported. I have seen 60 mg. of procaine in 1 cc. of spinal fluid injected between the 4th and 5th lumbar vertebrae result in anesthesia to the 5th thoracic in a woman in labor. The result was not harmful but certainly could not be considered "low spinal." It follows that any initial dose, either peridural or subarachnoid, should be injected "expectantly."

The needle in this patient should not have been removed before an attempt was made to aspirate spinal fluid, thus removing as much anesthetic agent as possible. I did attempt lumbar puncture for this purpose but was unsuccessful.

In my experience, any patient who complains of pain in the scapular region during injections late in the course of continuous caudal analgesia should have the procedure discontinued; relief will not follow, and the back pain will probably increase.

(*b*) *Intravenous Injection.*—Large veins present in the caudal canal may be punctured by the caudal needle and if unrecognized may result in intravenous injection. This event, though much more frequent than dural puncture, is not nearly as serious.[8] Again, after repeated aspiration for blood, "expectant" injection must be carried out to avoid untoward reactions. These range from a mild buzzing in the head to pronounced apprehension, syncope and sometimes convulsive seizures. (The latter has not occurred in this series.) I have had but one patient in whom any sign of too rapid absorption occurred except with the initial injection; this consisted only of the "buzzing" sensation mentioned. The method was discontinued.

(*c*) *Infection.*—All precautions must be taken to avoid infection. Caudal analgesia is never given in the presence of local skin infections. After thorough cleansing of the sacral and gluteal area with ether or carbon tetrachloride, the skin is carefully painted with any good skin antiseptic. The tip of the coccyx is palpated through a towel or sterile sponge. Gloves are worn throughout the procedure. Care is taken to

7. Cleland, J. G. P.: Paravertebral Anaesthesia in Obstetrics: Experimental and Clinical Basis, Surg., Gynec. & Obst. **57**: 51, 1933.

8. Diddle and Hill (Pulmonary Embolism During Continuous Caudal Anesthesia, West. J. Surg. **51**: 427, 1943) report a fatality in a patient managed with continuous caudal analgesia and ether. Postmortem examination showed a pulmonary embolism and infarct. The only thrombosis found after careful exploration of all veins was in a vein in the peridural space near the site of needle puncture.

avoid touching the piston of the syringe. Infections of the peridural space have been reported and have been fatal.[9] Hingson and Edwards advise the use of 5 per cent sulfathiazole ointment about the needle at its entrance in the skin; I also apply it to the skin on a dressing after removing the needle.

CASE 2.—A primipara aged 23 was given caudal analgesia before labor pains were regular or very severe; it was persisted in for thirty-six hours. During the last six hours the patient complained of severe pain in the neck and shoulders with each injection of anesthetic solution; no relief followed these injections. In spite of all this metycaine (total dose 740 cc.) the baby was delivered in excellent condition. Following her delivery the mother developed all the signs of meningeal irritation: rigidity of the neck, photophobia and severe headache. The temperature stayed at 102 F. for eight days. Treatment consisted in general care, sulfathiazole by mouth and repeated blood transfusions. No spinal puncture was done for fear of involving the subarachnoid space. The patient recovered completely and has had no residual paralysis or changes in sensation. The total time in the hospital was twenty-six days.

This patient also developed a badly infected perineum, which certainly accounted for some of her general reaction. However, the meningeal symptoms were unquestionably due to irritation in the peridural space whether from actual infection there or not. Persistence in repeated injections followed by pain in the neck and shoulder was certainly unwise. Such pain is always a signal to stop. It is possible that the continuous drip technic may avoid such pain.

The only other infection in the group was a skin abscess following an unsuccessful attempt to remove a broken needle. The abscess cleared rapidly following incision and drainage. There were no general symptoms. The needle was removed six months later. It could have been easily removed at the time of the accident by making a short incision at that time. This patient has had no ill effects from either the abscess or the presence of the foreign body in the caudal canal.

5. *What are the causes of failure and how can they be avoided?*

Any one having considerable experience with continuous caudal analgesia could, if he would, "hold forth" at length on the reasons for his failures. A few items deserve special mention:

(*a*) *Failure to Place the Needle in the Caudal Canal.*—This apparently obvious cause comes under two headings:

1. Recognition of the failure at the time and discontinuing the procedure in the given case.
2. Failure to recognize the needle's position and attempting to continue the analgesia.

This has occurred a number of times in this series and at first was classed as a partially satisfactory result. Obviously it is a complete failure, but the misinterpretation can be explained as follows and the failure and disappointment avoided. It usually occurs with a highly nervous patient who has "heard all about" the method. She is complaining loudly of her pain, and as soon as any procedure is instituted, such as making the initial skin wheal, she is greatly impressed and the "pains" disappear. One goes ahead with the introduction of the caudal needle and the preliminary injection, and even before the first 30 cc. dose is given, the patient may say that she feels no pain of contractions. In most instances this patient would have her pains disappear as the result of the excitement of the trip to or the admission into the hospital. In other words, she is the patient whose "toothache disappears when she gets to the dentist's office" only to have it reappear later. It has been long recognized that there is a distinct psychic factor in connection with the pains of labor; this is well borne out in this respect. With this in mind, it can be realized that no relief from pain can be due to the solution injected unless there is definite and progressive skin anesthesia extending to the abdominal wall. Any relief of pain without this is purely psychic and will be short lived.

(*b*) *Premature Administration.*—Failure has resulted frequently when analgesia was started in a primipara before effective labor pains have begun. Until progressive dilatation and descent of the presenting part can be determined by rectal or vaginal examination, it is better to withhold caudal analgesia. As already noted, the most ideal results are in those patients under analgesia seven hours or less. The method, as has been stressed by Hingson and Edwards, is to control severe pain and not mild discomfort of early labor. If necessary, any form of sedation commonly employed may be given to carry through before the onset of "productive" pains. In this manner the patient has the benefit of caudal analgesia when most needed and is not tired by lying in one position for too long a time.[10]

(*c*) *Intravenous Injection.*—Four analgesias were discontinued because of intravenous injection and resultant bizarre reaction (dizziness and apprehension). Careful replacement of the needle after aspirating blood, waiting a short time to allow the blood to coagulate, gentle aspiration and careful injection of metycaine will overcome this complication in most instances.

(*d*) *Hysteria.*—Two patients became hysterical when the skin wheal was made, and the attempt was discontinued.

(*e*) *Anomaly.*—Three patients presented anomalies of the sacrum which prevented insertion of the needle properly. I know of no way of overcoming this cause of failure.

(*f*) *Broken Needle.*—Failure occurred early in the series because of a broken needle. This needle could have been and should have been immediately recovered but, as noted, was removed at a later date.

6. *Obstetric Complications.*—(*a*) The most frequent variation from a normal mechanism of a vertex presentation is the occurrence of a transverse or completely posterior occiput and its failure to rotate. This apparently occurs for two reasons: A completely relaxed perineal floor fails to provide resistance against which the presenting part may rotate. Secondly, owing to the lack of voluntary bearing down there is some loss

9. Hingson, R. A., and Edwards, W. B.: An Analysis of the First Ten Thousand Confinements Managed with Continuous Caudal Analgesia, with a Report of the Authors' First Thousand Cases, J. A. M. A. **123**: 538 (Oct. 30) 1943. Carlisle, W. T., cited by Gready, T. G.: Some Complications of Caudal Anesthesia and Their Management, J. A. M. A. **123**: 671 (Nov. 13) 1943. Hall, L. S.: Report of a Case of Septicemia Following a Sacral Anesthetic, Am. J. Obst. & Gynec. **14**: 256, 1927.

10. Six primiparas, all with preeclamptic toxemia, were given continuous caudal analgesia before the onset of labor. Labor was then induced by the rupture of their membranes. The needle was left in position, and no more metycaine was injected until the onset of painful contractions. All these women were delivered vaginally within seven hours of healthy babies. The postpartum condition of all the mothers was excellent. One patient eight and one-half months pregnant began to have irregular contractions with considerable abdominal tenderness. This was interpreted as the onset of labor. Examination revealed a vertex engaged and the cervix beginning to dilate. The membranes were ruptured under pentothal anesthesia; regular, hard labor pains ensued. Caudal anesthesia was induced and a healthy baby delivered in six hours. The abdominal tenderness persisted, and two days later exploration revealed a gangrenous dermoid cyst of the right ovary the size of a grapefruit. This was removed under spinal anesthesia, and the mother made an uneventful recovery.

of power sufficient to rotate the head. When examination shows this to be the case I feel that the best way to manage the situation is to allow the analgesia to wear off, have the patient bear down with her returning painful contractions and thus, in the majority of cases, readily rotate the head to the anterior position. Analgesia may then be resumed and the head delivered spontaneously or by outlet forceps if desired. In many cases a transverse occiput can be readily rotated manually and delivered with low forceps. In 2 cases in this series I failed to allow the head to descend and rotate sufficiently, attempted rotation with midforceps unsuccessfully and in both instances the babies died, one one-half hour after delivery, the other seven days later with unquestionable signs of cerebral hemorrhage. These deaths could easily have been avoided.

Management of the third stage is particularly important in that one must insist on the policy of "hands off" the fundus of the uterus. If the uterus is let alone the great majority of placentas will separate and be readily delivered with slight traction on the cord within five or ten minutes. In these cases the blood loss is surprisingly slight, averaging between 50 and 80 cc. Premature manipulation of the fundus, as has been pointed out by Siever and Mousel,[11] results in tetanic contraction of the uterus and resultant retention of the placenta. If one waits until the placenta has separated, if gentle traction is made on the cord and if the fundus of the uterus pushed away from the placenta with the thumb of the left hand, the placenta is very readily delivered.

The following case is reported not as a complication of caudal analgesia but as the only maternal death in this series:

CASE 3.—A primipara aged 28, whose antepartum course was entirely uneventful, had an average gain in weight, normal urine and blood pressure and a negative Wassermann reaction. The expected date of confinement was June 6, 1943. She was admitted to the hospital in active labor on June 11, 1943 at 12:30 p. m. Continuous caudal analgesia was started at 2:30 p. m. with pains every two minutes, the vertex engaged and the cervix dilating rapidly; complete relief from all pain occurred in fifteen minutes. Relief continued throughout labor; the patient's condition was excellent. The head was in view at 5:30 p. m., and very easy delivery was effected with outlet forceps; the baby cried spontaneously. A lateral episiotomy was repaired and an attempt was made to express the placenta at 5:45. It had not separated, so I waited ten minutes and delivered it with somewhat more than moderate pressure on the fundus—there was no extreme force exerted and no pulling on the cord. Very little bleeding followed the expression of the placenta. The mother's immediate reaction was "Is that all there is to it?" Before leaving the delivery room the patient was given ergonovine hydrocrylate 1/320 grain (0.2 mg.) intramuscularly following the expression of the placenta. As she was being transferred to her bed the patient was quite nauseated and vomited a moderate amount. One-half hour later I was called and told that the patient was bleeding a large amount and was almost pulseless. An ampule of posterior pituitary injection was given and within fifteen minutes the patient was receiving plasma intravenously. I saw her within half an hour, at which time the radial pulse was barely palpable, the vaginal bleeding had checked, and on abdominal palpation the uterus was quite firm and a large clot was expressed. By this time the effect of the analgesia was wearing off and the patient complained of severe abdominal pain radiating into her legs. Because of her general poor condition at this time morphine sulfate 1/6 grain (11 mg.) was felt to be as large a dose as she would tolerate, and this was given. Her pain persisted and morphine sulfate 1/6 grain was repeated in one hour (7:30). By 8:30 the patient's general condition was improved; her pulse was palpable at the wrist, but she still complained of abdominal pain. (By this time she had received 1,000 cc. of blood plasma and 1,000 cc. of 5 per cent dextrose intravenously in isotonic solution of sodium chloride. At 10:30 the patient's condition had definitely improved. She was quite rational and still complained of abdominal pain, for which she received morphine sulfate 1/6 grain at 11 o'clock. She died suddenly at 2:15 a. m., June 12. Permission for autopsy was granted.

The body was well developed. There was no external evidence of trauma. The head and neck showed nothing of importance. The chest was well formed. The breasts were normal in appearance. On the abdomen there were no scars or visible hernia. The uterus felt firm and contracted through the abdominal wall. Vaginal examination revealed a large dark clot present in the vaginal canal. On the extremities there were no scars. There was no edema or varicosities. An incision (Y-shaped superiorly) was made from the upper end of the sternum to the symphysis pubis. On removal of the chest plate the heart and lungs were normal in appearance; there was no free fluid in the pleural cavities and no old or recent adhesions. The heart and lungs were not removed. When the peritoneal cavity was opened there was no free fluid, either clear or bloody, present. The liver, gallbladder and ducts, stomach, spleen, duodenum and the small and large intestine showed nothing abnormal. The uterus was of normal postpartum size, and the fundus was so inverted into the uterine cavity as almost completely to hide the ovaries and inner ends of the fallopian tubes. The uterus, tubes and ovaries were removed *en masse*. On examination after removal the inner (endometrial) surface of the fundus was inverted so as just to reach the dilated external os. The uterus on removal measured 8 by 11 by 14 cm.

This patient died of an unrecognized partial inversion of the uterus resulting in severe hemorrhage and profound shock. Two factors were important in the failure to make this diagnosis. In the first place I did not think of it and secondly did not recognize the severity of the hemorrhage. Examination of the literature shows this to be a rare and extremely dangerous complication. From this experience and from the evidence in the literature it seems evident that a great deal of the danger from this complication lies in the failure to realize its presence and consequent failure to administer adequate therapy for the shock and hemorrhage involved. In other words, this patient was treated empirically for shock, but had the diagnosis been made it is quite possible that immediate and adequate transfusions of whole blood would have changed the picture.

As to the management of the third stage, if we learn nothing else it is all important to realize that the uterus in a patient under caudal analgesia will, if not manipulated, spontaneously contract quite rapidly and express the placenta in the lower uterine segment or the vagina. It then can be readily delivered by gentle traction on the cord and pushing the uterus up and away from the placenta, previously described. It is quite possible that undue manipulation of the fundus in this case was a factor in causing the inversion.

Finally, it should be stressed that although it is common for multiparous patients to have severe after pains following caudal analgesia, often necessitating repeated doses of morphine, it is extremely rare for the primipara to experience such pain.

(*a*) *Breech Deliveries.*—There were four breech deliveries, three in primiparas. All of the babies cried spontaneously. It is especially wise to keep the level of skin anesthesia low in this group so that they may bring into play the voluntary force of the abdominal muscles. Otherwise the temptation is great to inter-

11. Siever, J. M., and Mousel, L. H.: Continuous Caudal Anesthesia in Three Hundred Unselected Obstetric Cases, J. A. M. A. **122**: 424 (June 12) 1943.

fere with the breech with the possibility of fracturing a femur unnecessarily. (This occurred in the 1 multipara.)

(*b*) *Cesarean Section.*—Sixteen patients in the group were sectioned under continuous caudal analgesia. Striking points are the very small blood loss (there is no need for oxytocic drugs), immediate respiration in all babies with no stimulation, and smooth convalescence. (The chief complaint of the majority is "I'm hungry" on the day of or following the operation.)

One of these cesarean sections was of the classic type; the rest were transverse incision of the lower uterine segment. All babies and mothers survived with no morbidity.

How are the babies affected? They are not unless it can be said that they are stimulated. Except in those patients who cannot be reached in time to offer them any form of sedation or analgesia, there is no method known to me which can so insure a lusty cry and a spontaneously breathing baby. All babies delivered in this series (there were three sets of twins) are alive and well with the following exceptions: macerated fetus, 2 (prior to admission); premature (six and one-half months with prolapsed cord), 1; stillborn (second of premature twins, seven and one-half months), 1; neonatal (thirty minutes and seven days), 2 (both difficult forceps applied too early).

7. Are there any unpleasant side-effects or sequelae?

Nausea does occur in a number of these patients. That this is caused in part by the anesthetic agent seems certain, since it is sometimes seen when the method is used for surgical cases (i. e., not in labor). It is my clinical impression that this occurs more often when an attempt is made to "push" the drug in attempting to raise the level of anesthesia too rapidly. It occasionally happens with the first injection. Its occurrence can be minimized by making the injections slowly and "expectantly."

The buzzing in the head and apprehension, mentioned previously, is more likely to occur when the needle is not properly placed. It would seem that, when its end is lodged in the areolar tissue present in the canal, rapid absorption, similar to intravenous injection, occurs with resulting untoward symptoms in a few cases. I have not seen this occur when injected air passed freely through the needle. Volpitto and his associates [12] report a fatality probably due to circulatory collapse. It is possible that a brief syncopal attack from too rapid absorption in a robust individual might result disastrously in one with an already damaged circulatory system. As I have mentioned before, any unusual symptoms in this series have occurred with the first 30 cc. injected with one exception (mild buzzing late in the course of labor). I am therefore impressed with the need for careful observation of the patient during the induction period.

Headache during the initial injection occurred in 1 patient in this series and was transient. (I have seen it in 1 other patient, treated for sciatic neuritis; here too it ceased with the injection.)

Afterpains.—Since these patients have been entirely free from pain during their labor, many of them complain of the severity of their afterpains. All multiparas are given morphine sulfate ⅙ to ¼ grain (11 to 16 mg.) on return to their room. A few of the primiparas will also require this relief.

12. Volpitto, P. P.; Woodbury, R. A.; Abreu, B. E., and Torpin, R.: Continuous Caudal Analgesia in Normal and Complicated Labor, South. M. J. 37: 83, 1944.

There were no important sequelae; 3 patients complained of residual numbness as follows:

1. Anesthesia over the coccygeal area lasting three weeks; normal sensation thereafter.
2. Anesthesia of formerly painful hemorrhoids for nine days post partum; following this they "hurt satisfactorily!"
3. Anesthesia of the left labial fold, discovered six weeks post partum when her husband returned from an army camp on an overnight pass. Normal sensation has developed since then.

It is only fair to note that the general public knows of several patients "who are paralyzed" in this community. When each is traced, the patient reports that she is unaware of the condition. One patient in particular was delivered by another physician by cesarean section under ether anesthesia!

RESULTS

The number of patients delivered was 300, the number of babies delivered, 303, the number of babies who died within seven days (including stillborn) 6, maternal deaths 1, cesarean sections (all satisfactory) 16, completely satisfactory analgesia 222, partially satisfactory analgesia 36 and failures 42.

SUMMARY

1. In the management of 300 obstetric cases with continuous caudal analgesia both the obstetric and anesthetic procedure were carried out by 1 person with no previous experience with caudal anesthesia.

2. With but 3 exceptions all the patients were watched after the "induction period" by a graduate nurse, the physician being constantly on call. The necessary subsequent doses of metycaine were given by the nurse. There were no accidents or complications due to the physician's absence. If the physician cannot be constantly present, it is highly desirable that all the patients be attended by one nurse especially trained and experienced with the method.

3. The method used is that developed by Hingson and Edwards using 1.5 per cent metycaine in saline solution or preferably isotonic solution of three chlorides. Care should be taken in selecting the patients for this method, especially early in one's experience.

4. The optimum duration of caudal analgesia in this series was seven hours or less. For reasons which I do not understand I was unable consistently to maintain complete relief in those patients requiring analgesia for a longer period. With these exceptions all patients were completely relieved if the caudal needle was so placed that the anesthetic solution has free and continued access to the peridural space.

The average duration of analgesia for primiparas was six hours twenty minutes and for multiparas three hours fifteen minutes.

5. The possible complications of the method are dural puncture, intravenous injection and infection.

6. Obstetric management is facilitated. The second stage is lengthened unless terminated by instrumental delivery in the majority of primiparas. The third stage is usually shortened and the blood loss diminished.

7. One maternal death occurred following inversion of the uterus.

8. The babies are remarkably unaffected.

9. Causes of failures were practically all due to faulty technic or use of the method too early in labor.

10. Unpleasant "side-effects" include nausea. There were no sequelae of any importance.

122 South Centre Street.

ACUTE INFECTIOUS LYMPHOCYTOSIS: A SPECIFIC INFECTION

REPORT OF FOUR CASES SHOWING ITS COMMUNICABILITY

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In 1941 I reported the cases of 2 young children who, with a minimum of clinical signs and symptoms, showed an unexpected and exaggerated lymphocytosis, with maximum leukocyte counts of 44,300 and 98,000 per cubic millimeter, respectively.[1] These cases were described in conjunction with those of a larger group of children with more moderate and prolonged lymphocytic reactions, which are more frequently encountered in pediatric practice. For these two types of blood conditions the terms acute and chronic infectious lymphocytosis, respectively, were suggested. The two forms of infectious lymphocytosis were differentiated clinically, hematologically and serologically from infectious mononucleosis, acute lymphatic leukemia and miscellaneous infections associated with lymphocytosis.

During March 1943, within a period of three weeks, 4 cases of acute infectious lymphocytosis were again observed at the New York Hospital. The fact that 3 of the patients were members of one family and 1 a hospital contact indicated that this disease possessed infectious and communicable aspects. Investigation of the patients in this group provided an opportunity for more extensive clinical and hematologic observations and also for pathologic examination of a lymph node in 2 of the children. Since the original report several cases of the same condition have also been observed in various hospitals in New York City.

It is my purpose in this paper to discuss in greater detail than was possible in the original publication the various aspects of acute infectious lymphocytosis. This added experience serves also to present confirmatory evidence for the view that this disease constitutes a specific entity and that with the aid of the criteria to be described it can be separated from other blood disorders.

REPORT OF CASES

History.—M. S., a girl 5 years of age, was admitted to the surgical service of the New York Hospital on March 3, 1943 with a temperature of 103 F. and the complaint of fever, vomiting and abdominal pain of twelve hours' duration. The child was acutely ill. The tonsils were hypertrophied and deeply injected, the heart and lungs were normal, and the abdomen was slightly resistant and tender over the right lower quadrant. There were a few shotty, cervical and inguinal nodes but no generalized lymphadenopathy and no splenomegaly. The first blood count showed 45,000 white cells per cubic millimeter, with 48 per cent lymphocytes and 45 per cent polymorphonuclear neutrophils. Within a few hours the white cell count rose to 55,400 per cubic millimeter, with 72 per cent lymphocytes. During the course of the day the temperature dropped, the abdominal pain subsided and the child was transferred to the pediatric service. On March 5 the temperature rose to 100 F., and a herpetic eruption appeared on the right side of the face. The child became afebrile and remained asymptomatic until her discharge from the hospital. As may be observed in table 1, leukocytosis and lymphocytosis persisted until March 30. Blood taken on March 4 was sterile on culture. Tests on March 8, 16 and 19, 1943 showed a heterophile antibody titer within the normal range. Cultures of material from the nose and throat on March 9, 1943 revealed nonhemolytic Staphylococcus aureus and nonhemolytic Streptococcus gamma. Lumbar puncture on March 9 showed a clear spinal fluid under normal pressure, with 2 lymphocytes and a negative Pandy reaction. The tuberculin test was negative. Sternal aspiration on March 5, when the white cell count was 40,500 per cubic millimeter with 74 per cent lymphocytes, revealed 152,000 nucleated cells per cubic millimeter. The differential count was as follows: neutrophilic band forms, 5 per cent; segmented forms, 3 per cent; lymphocytes, 43 per cent; eosinophils, 2 per cent; neutrophilic myelocytes, 21 per cent; eosinophilic myelocytes, 3 per cent; metamyelocytes, 11 per cent, and nucleated red cells, 12 per cent. Megakaryocytes were not observed in the counting chamber, but they were present in the smears and they were mature, showing platelet formation. The hemoglobin content and red cell count were normal throughout the course of this illness. The outstanding feature of the sternal aspiration was an elevation of lymphocytes (43 per cent, as compared with a normal of 15 to 25 per cent).

Biopsy.—An inguinal lymph node was removed on March 16. It was examined by Dr. N. C. Foot, who reported as follows: "Sections from this lymph node show a very unusual picture, inasmuch as all of the lymph sinuses between follicles are almost completely occluded by masses of proliferating reticuloendothelial cells. The germinal centers show hyaline degeneration of a varying degree. This is apparently a product of the action of some toxic agent. Practically all of the lymph follicles in the section show this change.

"Giemsa-stained sections show precisely the same changes noted in the Masson-stained sample. In addition to the proliferation of reticulum cells and degeneration of lymph follicles (which in these sections do not seem as marked as in the others), one notes a rather large number of eosinophils and occasional large atypical cells in the lymph follicles. It is understood that there is no specific picture for infectious lymphocytosis. That presented by this specimen is a combination of chronic lymphadenosis and acute lymphadenitis" (figs. 5 and 6).

MEMBERS OF THE FAMILY

About March 15, 1943 infections of the upper respiratory tract occurred in members of the family. For this reason the children were brought to the outpatient department of the New York Hospital for examination. The father, B. S., aged 33, had been admitted to the New York Hospital on March 14, 1943 and was discharged on March 20 with a diagnosis of pyelonephritis. During this admission, Widal and Brucella agglutinations were negative. A blood count on March 15, while he was in the hospital, is recorded in table 1.

The mother, M. S., and a brother, A. S., aged 10 years, had mild colds at this time, but their blood showed no abnormalities. Physical examination of A. S. showed entirely normal conditions. The 2 remaining children showed hematologic changes, and their clinical histories will be summarized. The blood counts of all members of the family are recorded in table 1.

R. S., a brother 16 months of age, had a nasopharyngitis and cough without fever for two weeks. On March 15 physical examination revealed a rhinopharyngitis. There was no enlargement of lymph nodes, the edge of the spleen was barely palpable, and the liver was felt 3 fingerbreadths below the costal margin. There was no fever. The blood showed 10,400 white cells per cubic millimeter, with 90 per cent lymphocytes. On March 24, when the white cell count had risen to 55,000 per cubic millimeter, the throat was still injected, the liver was felt 2 fingerbreadths below the costal margin and the tip of the spleen was just palpable. On subsequent examinations the spleen was not felt, and at no time was lymphadenopathy noted. The white cell count and the percentage of lymphocytes remained elevated until April 8, a period of approximately three weeks. Heterophile agglutinin reactions on April 1 and April 8 were negative. Cultures of material from the nose and throat on April 6 showed nonhemolytic Staph. aureus, nonhemolytic Str. gamma, pneumococcus type 19 and Haemophilus influenzae.

E. S., a sister 8¾ years of age, had a cold and sore throat for two weeks before the visit to the outpatient department

From the Department of Pediatrics, Cornell University Medical College, and the New York Hospital.

1. Smith, C. H.: Infectious Lymphocytosis, Am. J. Dis. Child. **62**: 231 (Aug.) 1941.

on March 15. On examination the child had a normal temperature, and the physical examination revealed no abnormality. The liver and spleen were not palpable. The lymph nodes were not enlarged. On that day her white blood cells numbered 15,000 per cubic millimeter, with 87 per cent lymphocytes, and on March 30 the count was 18,600 per cubic millimeter, with 70 per cent lymphocytes. The total white cell count and the percentage of lymphocytes remained elevated until April 6, a period of approximately three weeks. The heterophile antibody reactions on April 1 and April 8 were negative. Cultures of materials from the nose and throat on April 6 showed the same organisms as those of R. S.

On March 7 M. S., the patient in whom the leukocytosis was originally detected, was transferred to a room in the lungs were normal, and the spleen and liver were not palpable. The urine showed albumin (4 plus), numerous red blood cells and occasional white blood cells. Because of anemia, a transfusion of 200 cc. of blood was given on March 1, and 240 cc. of blood was given again on March 3. On March 22, the day before the suprapubic cystotomy, a routine blood count showed 48,000 white blood cells per cubic millimeter, with 68 per cent lymphocytes. In view of the child's normal appearance and normal temperature, this blood picture was so surprising that the count was repeated on the same day and showed 59,000 white blood cells per cubic millimeter. There were no clinical changes to account for this reaction. The child remained afebrile, and there was no sore throat nor enlargement of the lymph nodes or spleen. Several blood counts were made before

TABLE 1.—*Blood Studies in the Family of M. S. and in the Hospital Contact K. C.*

Name	Age	Date 1943	Hemoglobin Content, Gm. per 100 Cc.	Red Cells, Millions per Cu. Mm.	Packed Red Cells, Volume per Cent	White Cells per Cu. Mm.	Neutrophils: Percentage	Neutrophils: Band	Neutrophils: Segmented	Lymphocytes, Percentage	Monocytes, Percentage	Eosinophils, Percentage	Basophils, Percentage
M. S.	4 yr.	3/ 3	....	.....	..	45,000	45	..	..	48	2	5	..
		3/ 3	12.5	4.500	..	55,400	24	10	14	72	2	2	..
		3/ 5	....	.....	..	40,500	21	3	18	74	1	3	1
		3/ 6	12.5	4.204	40	37,900	14	2	12	80	1	5	..
		3/ 7	....	.....	..	39,100*	13	5	8	81	1	4	..
		3/10	....	.....	..	42,100	6	1	5	89	3	2	..
		3/14	....	.....	..	35,500	11	1	10	84	2	4	..
		3/29	12.0	4.004	37	13,600	16	2	14	78	2	5	..
		3/30	11.5	3.720	36	9,000	26	2	24	69	1	3	..
		4/ 6	....	.....	..	10,700	51	2	49	42	3	4	..
		4/13	....	.....	..	9,700	52	9	43	44	3	1	..
R. S. (brother)	16 mo.	3/15	....	.....	..	10,400	7	..	..	90	..	3	..
		3/24	....	.....	..	55,000	9	2	7	88	1	2	..
		3/30	11.0	4.150	39	23,700	12	1	11	85	1	2	..
		4/ 1	....	.....	..	17,000	22	2	20	75	1	2	..
		4/ 8	....	.....	..	9,900	45	3	42	49	2	4	..
		4/13	....	.....	..	10,400	48	5	43	44	6	1	1
E. S. (sister)	8¾ yr.	7/24/42	....	.....	..	8,000	74	..	..	24	2	..	..
		3/15/43	....	.....	..	15,000	12	..	..	87	..	1	..
		3/30	12.5	4.160	40	18,600	26	3	23	70	1	3	..
		4/ 1	....	.....	..	17,400	26	1	25	67	2	3	..
		4/ 6	....	.....	..	5,500	45	1	44	52	1	2	..
		4/ 8	....	.....	..	6,500	52	14	38	43	3	2	..
		4/13	....	.....	..	8,200	50	1	49	45	3	2	..
A. S. (brother)	10 yr.	3/15	....	.....	..	8,000							
		4/ 1	13.0	.....	40	5,700	46	1	45	47	7	..	..
		4/ 8	....	.....	..	6,500	44	1	43	52	3	1	..
Mrs. S. (mother)	.....	3/30	13.0	.....	40	5,400	66	1	65	32	1	1	..
Mr. S. (father)	.....	3/15	15.0	5.100	..	9,500	85	4	81	14	1	..	..
		3/30	14.0	.....	43	5,300	64	3	61	28	7	1	..
K. C. (hospital contact)	8½ yr.	2/27	9.0	3.300	..	11,000	66	6	60	30	3	4	..
		3/ 4	12.0	4.100	..	10,200	..	..	..	..	..	..	..
		3/13	12.6	4.100	..	8,100	..	..	..	..	..	..	..
		3/22	....	.....	..	48,000	..	..	..	68	..	..	..
		3/22	....	.....	..	59,000	..	..	..	76	..	..	..
		3/23	11.0	3.690	34	62,300*	14	2	12	76	3	6	..
		3/24	....	.....	..	58,200	20	2	18	73	2	5	..
			Operation 3/24										
		3/25	....	.....	..	68,300	38	3	35	54	8	..	..
		3/26	....	.....	..	60,300*	40	3	37	52	3	4	..
		3/28	....	.....	..	37,200	34	4	30	59	2	5	..
		3/31	....	.....	..	36,000*	32	2	30	60	3	4	..
		4/ 3	11.5	3.960	36	31,600	26	2	24	67	2	5	..
		4/11	....	.....	..	20,500	32	3	29	57	2	9	..
		4/17	11.5	4.040	37	11,300	33	3	30	61	1	5	..
		4/25	....	.....	..	8,400	68	5	63	31	1	1	..
		5/ 8	....	.....	..	7,200	45	6	39	51	2	2	..

* One myelocyte was noted in each of these differential counts.

children's pavilion with 4 other children. Since she was ambulatory, she was in daily contact with these children. One of her playmates was K. C.

K. C., a 9 year old girl, was admitted to the hospital on Feb. 27, 1943 for a suprapubic cystotomy prior to a plastic urologic operation. She had had two previous admissions to the New York Hospital. She was born with a spina bifida and a meningocele, and at 4 weeks of age the latter was removed. Rectal and vesical incontinence were present early in her course, and eventually a vesicovaginal fistula developed. Since her previous discharge from the hospital after plication of the neck of the bladder, vaginal bleeding had occurred periodically. Physical examination on admission showed that she was well developed, and except for pallor she did not appear ill. The tonsils were hypertrophied and not injected. The cervical nodes were small, and there was no other adenopathy. The head, eyes, ears and nose were normal. The heart and the leukocytosis was observed, and results of these and subsequent ones are recorded in table 1.

On March 23, when the peripheral blood showed 62,300 white cells per cubic millimeter, with 76 per cent lymphocytes, a sternal aspiration was performed. Examination of the marrow revealed a total count of 128,000 nucleated cells per cubic millimeter, with 22 megakaryocytes. The differential count showed the following distribution: neutrophilic band forms, 6 per cent; segmented forms, 12 per cent; lymphocytes, 42 per cent; eosinophils, 3 per cent; neutrophilic myelocytes, 14 per cent; eosinophilic myelocytes, 1 per cent; metamyelocytes, 8 per cent; myeloblasts, 1 per cent, and nucleated red cells, 13 per cent. Normal platelets were given off by the megakaryocytes.

Despite the abnormal blood reaction, the suprapubic cystotomy was performed on March 14. Except for a slight increase in polymorphonuclear neutrophils and a decrease in

lymphocytes immediately following the operation, the trend of subsequent total and differential white cell counts corresponded to that of the other affected children. Heterophile antibody tests on March 24 and on March 31 elicited negative reactions. The three remaining playmates of M. S. showed normal blood counts.

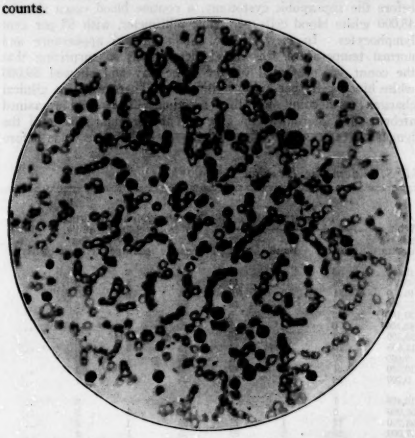

Fig. 1 (patient M. S.).—Blood smear × 400. Figures 1, 2, 3 and 4 are photomicrographs of typical blood smears in acute infectious lymphocytosis, demonstrating the hyperleukocytosis and the increase in the small, mature lymphocytes.

Biopsy.—A cervical lymph node was removed on March 31. Examination by Dr. N. C. Foot showed the following: "Microscopically the picture in this lymph node is essentially the same as that seen in the previous one submitted with a diagnosis of infectious lymphocytosis. There is a very marked proliferation of the reticuloendothelium of the sinuses, which are almost completely blocked by masses of these cells. The lymph follicles are very inconspicuous, practically obliterated, and show no germinal centers. There is a good deal of migration of the cells in the follicles, and numerous polymorphonuclears are seen, sometimes grouped into masses. Here and there mitotic figures are noted in the scanty lymphoblasts. The picture is so strikingly similar to that noted in the previous case that the lesion is immediately recognizable as the same, and it is probable that one has here a heretofore unrecognized pathologic lesion of the lymph nodes.

"Giemsa-stained sections show the same features brought out by the Masson stain. Here and there one notes large dark cells somewhat resembling lymphoblasts but somewhat intermediate in appearance between these and monocytes. They are not unlike the cells noted in infectious mononucleosis. They are not, however, at all numerous. Otherwise the description does not differ from that of the Masson-stained sections" (figs. 7, 8 and 9).

CLINICAL FEATURES

In acute infectious lymphocytosis the lymph nodes and spleen are not enlarged and the clinical manifestations are usually mild or absent, or if severe they are of short duration. One of the patients who was the subject of report in the previous communication (J. G.) had been admitted to the hospital because of pain in back of the neck and head. There was no fever, and the symptoms subsided rapidly. The other patient had no complaints.

In the group of cases comprising the present report, the first child, M. S., was admitted to the hospital with an elevated temperature, vomiting and abdominal pain. The tonsils were deeply injected, and the abdomen was slightly resistant and tender over the right lower quadrant. These signs and symptoms subsided within forty-eight hours. In the affected sister, E. S., and the brother, R. S., the symptoms were those of a mild infection of the upper respiratory tract. K. C., the contact, appeared well throughout the period of the blood reaction.

The group of 16 cases which Reyersbach and Lenert [2] reported from one institution with a diagnosis of infectious mononucleosis can now more appropriately be classified as instances of acute infectious lymphocytosis. These children were asymptomatic and showed no abnormalities on physical examination. Occasionally the symptoms at the onset may be severe, as in the case recently studied by Duncan.[3] His patient, 4 years and 11 months of age, had a fever which reached a peak of 103 F. on the fourth hospital day. Generalized abdominal pain, tenderness and rigidity, headache and irritability were conspicuous features. The highest count in this case was 110,000 white blood cells per cubic millimeter, with 92 per cent normal small lymphocytes. In 2 cases (Patricia G. and Anita G.) reported by Thelander and Shaw [4] of infectious mononucleosis occurring in young children, the signs at the onset were those of encephalitis and of meningitis respectively. The maximal white cell counts were respectively 50,500 cells per cubic millimeter with 81 per cent lymphocytes and 45,700 cells with 81 per cent lymphocytes. The blood picture in each case resembled that of acute infectious lymphocytosis, since here too the spleen and lymph nodes were not enlarged and the heterophile agglutination titer was low. In 4 other typical cases observed recently in children in other institutions in New York City the complaints included cough, fever, nausea, vomiting and abdominal pain. In none of the

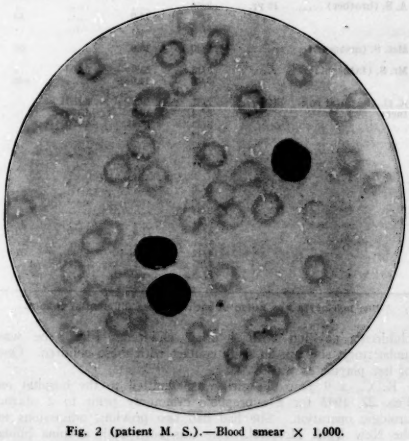

Fig. 2 (patient M. S.).—Blood smear × 1,000.

cases was there lymphadenopathy or splenomegaly, and in all instances the heterophile agglutinin reaction was negative. The maximum white cell counts in these cases

2. Reyersbach, G., and Lenert, T. F.: Infectious Mononucleosis Without Clinical Signs or Symptoms, Am. J. Dis. Child. **61**: 234 (Feb.) 1941.
3. Duncan, P. E.: Acute Infectious Lymphocytosis, Am. J. Dis. Child. **66**: 267 (Sept.) 1943.
4. Thelander, H. E., and Shaw, E. B.: Infectious Mononucleosis with Special Reference to Cerebral Complications, Am. J. Dis. Child. **61**: 1131 (June) 1941.

ranged from 34,000 cells per cubic millimeter with 65 per cent lymphocytes to 49,200 cells with 88 per cent lymphocytes. A characteristic feature in all cases, including those of the present series, is that while the symptoms and physical signs are of short duration the

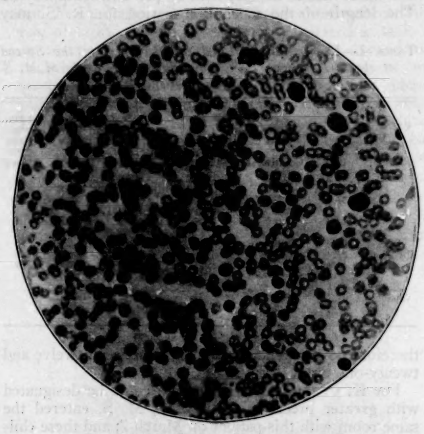

Fig. 3 (patient K. C.).—Blood smear × 400.

hyperleukocytosis continues for a period of approximately three to five weeks.

In 3 of the cases of the present report there was a history of recent infection of the upper respiratory tract, and in 2 the throat was deeply injected at the time of the initial examination. In cases of acute infectious lymphocytosis, abdominal pain may represent a striking symptom, with the result that the patient is frequently admitted to the surgical service. The abdominal pain probably arises from enlarged mesenteric lymph nodes in a manner similar to that known to occur in association with infections of the throat. In 2 of the cases also herpetic lesions appeared on the face. The outcome in all the cases thus far studied has been uniformly favorable.

LABORATORY EXAMINATIONS

Blood.—In the 4 cases the outstanding feature was the blood picture, which was characterized by an unexpected hyperleukocytosis with a preponderance of lymphocytes, all of the normal small and intermediate types (figs. 1, 2, 3 and 4). Since the blood picture has been fully described in the previous communication,[1] it will only be reviewed briefly here. The red blood cells, hemoglobin content and platelet values are normal if the disease is uncomplicated. In K. C. the anemia was probably due to the local loss of blood associated with the urologic condition.

The maximum leukocyte counts for M. S. and for her brother R. S. were respectively 55,400 and 55,000 white cells per cubic millimeter, with 72 and 88 per cent lymphocytes. In K. C. the maximal value before operation was 62,300 white cells per cubic millimeter, with 76 per cent lymphocytes. Immediately after the suprapubic cystotomy the white cell count rose to 68,000 cells per cubic millimeter but the lymphocytes dropped to 54 per cent. The lower percentage of lymphocytes on this and on the days following may be attributed to the reaction arising from operative procedures. It is possible that the total white cell counts of E. S. may have reached higher levels than those recorded but were overlooked because of infrequent observations.

The important features of the blood picture in all cases consisted, therefore, in the hyperleukocytosis, the preponderance of lymphocytes and the normal cytologic appearance of the latter. The lymphocytes were mainly of the small variety and were of uniform size and normal structure (figs. 1, 2, 3 and 4). Occasionally slightly larger or intermediate types were encountered, but these were also mature cells. The cytoplasm was usually scant, and in an occasional cell it was moderately basophilic. The duration of the abnormal leukocytic reaction in the 4 cases of the present series was three to four weeks.

Bone Marrow.—The myeloid elements and nucleated red cells were normal in number, and the outstanding feature in M. S. and in K. C. was the increased number of normal small lymphocytes. The value for each was 43 and 42 per cent respectively, as compared with a normal lymphocytic percentage of 15 to 25 per cent.

Heterophile Agglutination (Paul-Bunnell) Test.—The serum of each of the 4 patients was tested at least twice for heterophile antibody, and the reaction was uniformly negative.

Serologic and Bacteriologic Data.—Few laboratory studies have been carried out to determine the etiologic agent responsible for this disease. Reyersbach and Lenert [2] injected unfiltered throat washings and plasma from 2 of their patients into rabbits. The animals remained well, no change occurred in the total leuko-

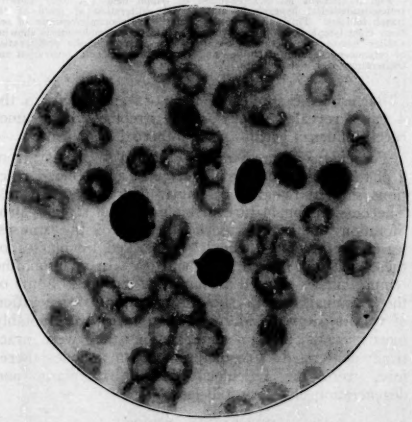

Fig. 4 (patient K. C.).—Blood smear × 1,000.

cyte or differential counts, and no rise in agglutinins for sheep red cells was noted.

Serologic studies on the 4 patients in the present group were carried out by Drs. Thomas and Horsfall of the Hospital of the Rockefeller Institute. Complement fixation studies were negative for lymphocytic choriomeningitis. The serums were also tested for antibodies against influenza A and B virus by the Hirst

technic and gave negative results. The fresh serum of M. S. obtained on March 6 was inoculated on that day into 6 mice and 2 guinea pigs by the intracerebral and intraperitoneal routes. These animals have remained entirely well.

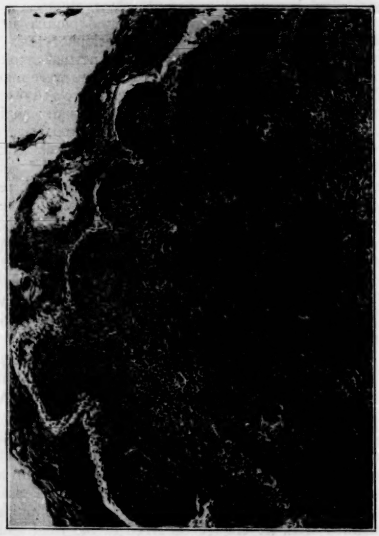

Fig. 5 (patient M. S.).—Section of lymph node (× 300) showing reticuloendothelial hyperplasia and partial obliteration of some of the lymph follicles. This and figures 6, 7 and 8 are photomicrographs of sections from lymph nodes in cases of acute infectious lymphocytosis showing similar microscopic pictures. Sections demonstrate definite proliferation of reticuloendothelium of sinuses and varying degrees of degeneration and obliteration of lymph follicles.

Bacteriologic studies of the nose and throat in the 4 cases revealed staphylococci, streptococci, pneumococci, influenza bacilli and diphtheroid organisms.

Pathology.—Lymph nodes obtained for biopsy from 2 of the patients during the stage of active blood reactions showed remarkably similar microscopic pictures. The outstanding feature in both was the striking proliferation of the reticuloendothelium of the sinuses, which were almost completely blocked by masses of these cells (figs. 5, 6, 7, 8 and 9). In addition, the lymph follicles showed a number of changes. Some of the germinal centers showed a hyaline degeneration of varying degree. Many of the follicles were notably inconspicuous, and in some sections they were practically obliterated. Common to both lymph nodes, therefore, were the reticuloendothelial hyperplasia and degeneration of lymph follicles.

INCUBATION PERIOD

Because of infrequent white cell counts in the early stages of the blood reaction, it was difficult to state an actual period of incubation. The cases of infectious lymphocytosis in the family of M. S. may have all originated from a common source, since for a short period the blood counts were elevated in the 3 children simultaneously. Hyperleukocytosis, however, occurred in R. S. when the blood count in M. S. was almost normal. Possibly R. S. was infected by his sister at home, since the last contact between them was on March 3, when the latter was admitted to the hospital. On March 15 the total white cell count in R. S. was only 10,400 cells per cubic millimeter, but the lymphocytes numbered 90 per cent. On March 24 the white cell count rose to 55,000, with 88 per cent lymphocytes. The length of the incubation period for R. S. may

TABLE 2.—*Representative Blood Counts Showing the Spread of Acute Infectious Lymphocytosis in the Family of M. S. and in the Hospital Patient K. C.*

Name	Date 1943	White Cells per Cu. Mm.	Lymphocytes, Percentage	Name	Date 1943	White Cells per Cu. Mm.	Lymphocytes, Percentage
M. S.	3/ 3	55,400	72	K. C.	2/27	11,000	30
	3/ 5	40,500	74		3/ 4	10,200	
	3/ 7	39,100	81				
		(Transferred to room with K. C. on 3/7/43)					
	3/14	35,500	84		3/13	8,100	
					3/22	59,000	76
R. S.	3/15	10,400	90		3/23	62,300	76
(brother)	3/24	55,000	88		3/24	58,200	73
	3/30	23,700	85		3/31	36,000	69
E. S.	3/15	15,000	87				
(sister)	3/30	18,000	70				
	4/ 1	17,400	67				

therefore have extended somewhere between twelve and twenty-one days.

For K. C. the incubation period could be designated with greater precision (table 2). M. S. entered the same room with this patient on March 7, and these children were in intimate contact until March 24. The first abnormal blood reaction for K. C. was noted on March 22, fifteen days after the first contact. The length of the incubation period may have been shorter than this, since no blood counts were made between March 13 and March 22.

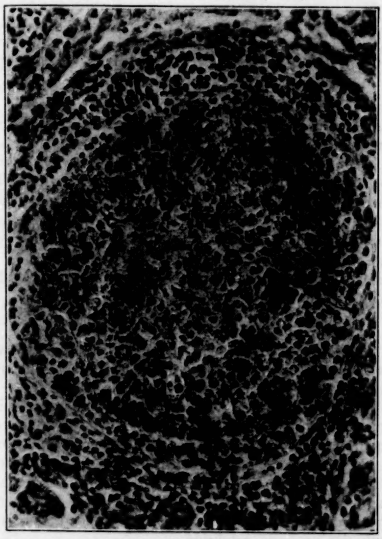

Fig. 6 (patient M. S.).—Higher magnification of a single lymph follicle in figure 5 (× 700) showing hyaline degeneration of the germinal center.

DIFFERENTIAL DIAGNOSIS

In the diagnosis of infectious lymphocytosis the conditions most frequently considered are infectious mononucleosis, acute lymphatic leukemia and a leukemoid reaction of the lymphoid type.

Infectious Mononucleosis.—There are many clinical and hematologic points of differentiation between the two diseases. These have been summarized in table 3. In infectious mononucleosis there is usually a prodromal period of malaise followed by fever, enlargement and tenderness of the lymph nodes, sore throat and splenomegaly. The febrile phase lasts one to three weeks and then subsides, although enlargement of the glands and of the spleen persists. Acute infectious lymphocytosis, on the other hand, may run its course without

Fig. 7 (patient K. C.).—A low power view of a lymph node to illustrate evident reticuloendothelial hyperplasia and obliteration of lymph follicles. Reduced from a photomicrograph with a magnification of 60 diameters.

significant clinical signs or symptoms, or there may be sore throat, fever and severe constitutional symptoms which last several days only. The lymph nodes and spleen are not enlarged. The heterophile antibody reaction is positive in infectious mononucleosis and consistently negative in acute infectious lymphocytosis.

The blood picture constitutes the most important differential feature between the two diseases. In infectious mononucleosis the total white cell count usually does not exceed 20,000 per cubic millimeter, whereas acute infectious lymphocytosis is characterized by a hyperleukocytosis, with maximal levels frequently exceeding 50,000 cells per cubic millimeter. It may be that the cases of infectious mononucleosis reported previously with extreme leukocytosis belonged to the category of acute infectious lymphocytosis. A more important feature of the hematologic differentiation rests in the morphologic appearance of the lymphocytes in the two conditions. As already stated, in acute infectious lymphocytosis the hyperleukocytosis is associated with a preponderance of small lymphocytes possessing a normal cytologic appearance. In infectious mononucleosis the most important feature of the hematologic differentiation is the presence of atypical mononuclear elements. These cells may be so abnormal in structure,

Fig. 8 (patient K. C.).—Higher power view of section of lymph node shown in figure 7 (× 400) demonstrating in greater detail pronounced proliferation of reticuloendothelium.

Fig. 9 (patient K. C.).—Section of lymph node (× 600) showing reticuloendothelial hyperplasia in greater detail.

size and staining reaction that classification is difficult. They have been identified, however, as lymphocytes by the supravital technic and have been fully described in the previous communication.[1] The most character-

istic cells have ragged and irregular edges; their cytoplasm is usually abundant, is frequently vacuolated and stains darker blue with the Wright stain than do normal lymphocytes. The combination of fine vacuolation and basophilia gives the cytoplasm a foamy appearance, which is a striking and distinctive feature of the cells in infectious mononucleosis. In general, the variability of the atypical lymphocytes in infectious mononucleosis contrasts sharply with the uniform size and normal structure of the cells in acute infectious lymphocytosis.

There is no uniformity of opinion as to the appearance of the sternal marrow in infectious mononucleosis. Some investigators have reported atypical mononuclear elements,[5] whereas others have found no abnormalities.[6] In 3 children with infectious mononucleosis examined at this hospital, bone marrow puncture showed the presence of an occasional atypical lymphocyte, and in 2 the percentages of lymphocytes were at the upper level of normal. In 5 cases of acute infectious lymphocytosis, on the other hand, of M. S. and K. C. in the present study, of the 2 patients reported previously and of 1 recently described by Duncan,[3] examination of the bone marrow showed an increased number of normal small lymphocytes in the differential count.

Leukemia.—The extreme leukocytosis and the predominance of lymphocytes in acute infectious lymphocytosis have occasionally led to its confusion with acute lymphatic leukemia. The identification of the lymphoblast represents the most important element in the diagnosis of leukemia from the blood smear. Lymphoblasts are usually round, large and uniform in size, and the narrow zone of cytoplasm is basophilic and occasionally contains a few large vacuoles. But more distinctive is the nuclear pattern. Instead of masses of dense basichromatin, as found in the nucleus of the normal lymphocyte of acute infectious lymphocytosis, the chromatin of the nucleus of the lymphoblast stains lightly, is finely granular, stippled or sievelike and shows the presence of nucleoli. In acute lymphatic leukemia with a hyperleukocytosis of the magnitude found in infectious lymphocytosis the blood would exhibit not only large numbers of lymphoblasts but a severe anemia and a decrease in platelets, and enlargement of the spleen and lymph nodes would be present.

Examination of the bone marrow also serves as a useful means of differentiation between the two diseases. In acute lymphatic leukemia in children, sternal aspiration shows complete replacement of the bone marrow by lymphoblasts. In acute infectious lymphocytosis, on the other hand, the myeloid and erythroblastic elements are present in normal proportions and the only abnormality is the presence of normal lymphocytes in increased percentage.

Leukemoid Reactions.—The hyperleukocytosis cannot be regarded as a leukemoid reaction of the lymphoid type, for such a designation implies the presence of specific immature cells which occur in leukemia. Neither the blood nor the bone marrow showed atypical cells of the lymphocytic series. Also, while a leukemoid reaction resulting from infection is transitory, the blood picture in infectious lymphocytosis persists for a prolonged period. Cough was not present in any of the children, so that the extreme leukocytosis and lymphocytosis occasionally encountered in pertussis could be eliminated.

TABLE 3.—*Differential Diagnosis*

Signs and Symptoms	Acute Infectious Lymphocytosis	Infectious Mononucleosis	Acute Lymphatic Leukemia
Fever and systemic symptoms	Absent, or present at onset only	Usually persists one to three weeks	Present at variable periods during course
Enlarged lymph nodes	Absent	Present	Present
Splenomegaly	Absent	Present in 50 per cent of cases	Present
Total leukocyte count	Hyperleukocytosis	Moderate leukocytosis	Ranges from leukopenia to pronounced leukocytosis
Lymphocytosis	Present	Present	Present
Diagnostic cells	Normal, small lymphocytes	Atypical and abnormal lymphocytes	Lymphoblasts
Anemia	Absent	Absent	Present
Thrombocytopenia	Absent	Absent	Present
Bone marrow	Increased number of normal small lymphocytes	Normal; occasionally atypical lymphocytes may be present	Lymphoblasts predominate
Heterophile agglutination test	Negative	Positive	Negative
Prognosis	Uniformly favorable	Uniformly favorable	Uniformly fatal

COMMENT

The cases of acute infectious lymphocytosis reported in this paper and those observed elsewhere give support to the view that this disease is both infectious and contagious. It may also occur sporadically, as noted in the earlier cases. Its communicability was demonstrated by its appearance in three members of one family and in a hospital contact. The cases have also provided an opportunity for acquiring additional information concerning the clinical and hematologic aspects of this disease since its initial description. It is obvious now, for instance, that the transitory nature of the hyperleukocytosis and the minimal symptoms and physical signs received undue emphasis in the earlier paper. The more recent studies show that the elevated leukocyte count usually persists for approximately three to five weeks. Furthermore, the clinical course may range in severity from one with mild and all but negligible symptoms, as in the contacts, to one of a moderate or pronounced degree, as in the case of M. S. in this report and in that recently described by Duncan.[3]

This wider experience justifies the view that acute infectious lymphocytosis represents a specific infection

5. Bernstein, A.: Infectious Mononucleosis, Medicine **19**: 85 (Feb.) 1940.

6. Rohr, Karl: Neue Deutsche Klinik: Handwörterbuch der praktischen Medizin, Berlin, Urban & Schwarzenberg, 1937, vol. 14, p. 540. Vogel, P., and Bassen, F. A.: Sternal Marrow of Children in Normal and in Pathologic States, Am. J. Dis. Child. **57**: 245 (Feb.) 1939.

which can be separated from infectious mononucleosis, acute lymphatic leukemia and miscellaneous infections associated with lymphocytosis. Its development in 4 persons within a short time indicates that the blood picture cannot be regarded as a peculiar individual response to a nonspecific infection. The disease possesses a possible incubation period of twelve to twenty-one days and may be marked by varying degrees of constitutional reaction at the onset, such as vomiting, irritability and fever, together with acute abdominal signs and symptoms and occasionally signs of involvement of the nervous system. With the exception of evidences of infection of the upper respiratory tract there is an absence of significant physical changes, such as lymphadenopathy and a palpable spleen. The heterophile agglutination reaction is uniformly negative. In 2 of the cases the biopsy of a lymph node showed a strikingly similar microscopic appearance. Examination of the sternal marrow in the present cases and in those of the earlier group showed an increased number of small mature lymphocytes in the differential count but no replacement by lymphoblasts and lymphocytes, which occurs in lymphatic leukemia. The most characteristic feature of all, however, was the hyperleukocytosis with relative and absolute lymphocytosis persisting for a prolonged period. Normal small lymphocytes accounted for this increase and presented the most important diagnostic element of the blood picture.

A feature common to most of the cases is infection of the upper respiratory tract. The organisms obtained from routine cultures of material from the nose and throat of the children of the present group and in those studied previously probably represent secondary invaders. They were no different from those present in other patients with similar respiratory infections who showed no unusual hematologic response. Furthermore, when patients with infectious lymphocytosis have had other illnesses which were associated with a similar group of organisms, the blood on these occasions has shown a neutrophilic response. It is possible, therefore, that the inciting agent is a specific virus and that its isolation will depend on the examination of materials obtained directly from the nose and throat, specialized technics being employed. The immunologic tests carried out with serums from patients in the present study were negative for lymphocytic choriomeningitis and for influenza A and B virus. Should the etiologic factor eventually prove to be of a virus origin, its blood response would be unique, for in the group of virus diseases the blood picture is characterized by a leukopenia with a relative lymphocytosis. It is further interesting to note that the cases of acute infectious lymphocytosis have all been reported since 1939. The appearance of this disease within a relatively short period suggests infection by a causative agent of recent origin.

Although the microscopic picture of the lymph nodes from the 2 cases was remarkably similar, further biopsy studies will be necessary before it can be accepted as specific for this disease. The degeneration of the lymph follicles and the striking proliferation of the reticuloendothelium of the sinuses common to the two lymph nodes, probably represent the reaction to a toxic agent. The source of the extraordinary lymphocytosis of the peripheral blood cannot, however, be detected in the lymph nodes and must obviously be sought for elsewhere. Lymphocytes are known to originate in other sites where lymphatic tissue is found, such as in the spleen and in the gastrointestinal tract.[7] The presence of lymphocytes in increased numbers in the bone marrow indicates the activation of solitary nodules in this location,[8] and these may serve as a contributory source for the cells in the peripheral blood.

SUMMARY

Four cases of acute infectious lymphocytosis were observed within a period of three weeks. Three occurred in one family and 1 in a hospital contact. Investigation of these patients and of 5 others observed in various hospitals in New York City within the past two years provided an opportunity for additional clinical and hematologic observations since the initial description of this disease. On the basis of more extensive experience the features of this disease may be summarized as follows:

1. Acute infectious lymphocytosis represents a specific entity which can be separated from infectious mononucleosis, acute lymphatic leukemia and miscellaneous infections associated with a lymphocytosis.

2. The disease is both infectious and contagious and has a possible incubation period of twelve to twenty-one days.

3. Hyperleukocytosis, with a relative and absolute lymphocytosis due to an increase in normal small lymphocytes, constitutes the most important element in the diagnosis. Elevated blood levels persist from three to five weeks. The normal lymphocytes in this disease are in sharp contrast to the atypical and abnormal mononuclear elements in infectious mononucleosis and to the lymphoblasts in leukemia.

4. Clinical signs and symptoms may be so mild as to escape attention, or the onset may be marked by varying degrees of constitutional reaction. The latter, of short duration, may include vomiting, irritability, fever, abdominal signs and symptoms and occasionally signs of involvement of the nervous system. Abdominal signs may be sufficiently pronounced to suggest an acute surgical condition.

5. Infection of the upper respiratory tract represents the most common finding in all cases. There is an absence, however, of significant physical changes, such as lymphadenopathy and a palpable spleen.

6. The heterophile agglutination reaction is uniformly negative. The biopsy of a lymph node in 2 of the cases showed a strikingly similar microscopic appearance, consisting in degeneration of the lymph follicles and striking proliferation of the reticuloendothelium of the sinuses.

7. Serologic reactions were negative for lymphocytic choriomeningitis and for influenza A and B virus. The etiologic agent may be an undetermined virus related to infection of the upper respiratory tract.

8. In all cases the disease was uncomplicated and had a uniformly favorable outcome.

9. The evidence indicates that acute infectious lymphocytosis represents a heretofore unrecognized communicable disease of recent origin, in which the blood picture serves as an expression of the infection.

7. Bloom, W.: Lymphocytes and Monocytes: Theories of Hematopoiesis, in Downey, H.: Handbook of Hematology, New York, Paul B. Hoeber, Inc., 1938, vol. 1, p. 405.
8. Bloom, W.: Lymphatic Tissue: Lymphatic Organs, in Downey, H.: Handbook of Hematology, vol. 2, p. 1461.

HUMAN DANDER

AN IMPORTANT CAUSE OF INFANTILE ECZEMA

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In previous reports evidence has been presented demonstrating the existence of an allergen in human dander, human hair from the scalp (probably including adherent dander) and in seborrheic eczema scales.[1] The allergen was detected by means of skin reactions in certain patients with eczema. In 9 of 11 adults with atopic eczema urticarial reactions were obtained to scratch tests. In all 9 cases reagins were demonstrated by local passive transfer. In 8 of 12 infants and young children with eczema, eczematous reactions (redness, swelling, papulation, scaling) were obtained to patch tests (fig. 1). Negative controls were carried out with both types of test. In the case of the patch tests 23 noneczematous children, including 8 newborn infants, 9 other nonatopic children and 6 atopic noneczematous children, were tested. Twenty-two gave negative tests; 1 gave a moderately positive test. The etiologic significance of the urticarial reactions in the adults has not yet been investigated. The present study demonstrates the significance of the reactions to patch tests in the infants and young children. The latter series has been increased to a total of 20 cases; 15 reacted positively and 5 negatively.

The proof of the importance of human dander as a cause of eczema in infants and young children consists of:

1. The demonstration that a large proportion of eczematous patients give positive reactions to patch tests with human dander, whereas in noneczematous persons of comparable age the incidence of positive reactions is very low.

2. The evident fact that all children are exposed to human dander every day because all children are cared for by their parents, nurses or other attendants, all of whom have more or less dander whether they realize the fact or not. The child himself may have dander on his own scalp. The occurrence of the lesions on exposed skin areas and their frequent absence on areas protected by clothing is additional evidence favoring the concept of exposure to a surface contact agent.

Fig. 1 (case 2).—Positive reactions to patch test with human dander, stock dander, mother's dander, child's own dander. Negative reactions to wool and dog dander.

3. The retrogression and disappearance of the lesions following avoidance of exposure.

4. The reproduction of the lesions at will on any given location by exposure of the chosen skin area to the dander.

Points 1 and 2 of this evidence have already been established. In order to demonstrate the two remaining conditions, 4 patients were chosen for study. They were selected because they had typical cases of eczema with positive patch tests to human dander and because their mothers were interested and intelligent and seemed to be willing to cooperate.

Case 1.—C. B., aged 12 months, had eczema on the face and on the upper and lower extremities of three months' duration. The father had asthma. Scratch tests to thirty-six foods and inhalants were negative. Patch tests were definitely positive to human dander (stock dander, mother's dander and the patient's own dander) (figs. 2 and 3).

Fig. 2 (case 1).—Eczema of upper and lower extremities and face before institution of measures directed at protection of the skin from contact with human dander.

Case 2.—B. F., aged 2 years, had eczema on the face, the arms, the forearms and the cubital and popliteal spaces of twelve months' duration. The mother had hay fever. Scratch tests were negative to thirty-six foods and inhalants. The patch test was definitely positive to human dander.

Case 3.—C. E., aged 30 months, had eczema on the face and the upper and lower extremities of fifteen months' duration. There was no hay fever or asthma in the family, but one brother had eczema. Scratch tests were positive to egg, milk and orris root. Patch tests were definitely positive to human dander.

Case 4.—D. B., aged 5 years, had had eczema on the face, arms, forearms and popliteal spaces from October to June since 11 months of age. The mother had perennial hay fever and urticaria. Scratch tests were negative to thirty-six foods and inhalants. Patch tests were definitely positive to human dander, including dander from the mother's scalp.

The mothers were told that their children were allergic to human dander and that it might be an important cause of the eczema. In order to prove, however, that it actually was the cause it would be necessary to (1) make the present lesions disappear by protecting the involved areas from exposure to human dander and (2) reproduce the lesions at some new chosen location by intentional exposure to the dander.

Avoidance of dander was to be accomplished by the following routine: 1. Parents and others in contact with the child were instructed to wash their scalps

From the Departments of Medicine and of Bacteriology and Immunology of the University of Louisville School of Medicine.

1. Simon, F. A.: On the Allergen in Human Dander, J. Allergy, to be published; Skin Reactions to Patch Test with Human Dander, Ann. Allergy, to be published.

thoroughly at least once a week with soap, water and brush. 2. The child's scalp was to be treated likewise. 3. The child was to wear long sleeves to the wrists and long stockings reaching above the knees. 4. No one was permitted to hold the child without first putting on a clean, washable jacket over his ordinary clothing and covering the scalp and hair with a clean cap or cloth arranged to enclose completely all the hair. 5. The child's face was not permitted to come in contact with the parent's face or hair, and the child's arms were not to be placed about the parent's neck.

Parents all freely admit that mutual affection between parent and child prevents these instructions from being carried out to the letter. As a matter of fact there is reason for believing that they were carried out very poorly in these cases. Even though they try, parents simply do not realize the importance of preventing the baby's face from coming in contact with their face, neck and shoulders, which are probably contaminated with dander. In 2 cases the lesions showed very definite and satisfactory improvement. In 1 case they almost entirely disappeared with the exception of a small area on the right cheek. (The mother usually holds this child on the left arm.) In the fourth case there was moderate improvement. This was a very affectionate child, and the father did not wash his scalp. These results were accomplished in less than four weeks in

Fig. 3 (case 1).—Improvement in condition following diminution of contact with human dander.

February, a time when there is no seasonal improvement in this type of eczema. (In many cases improvement occurs in hot weather.) The abdomen was chosen as the site for reproduction of the lesions, because the skin of this area appeared to be normal in all 4 cases. The mother was instructed to rub her hair on the child's abdomen for two or three minutes twice daily. In all 4 cases typical eczematous areas were produced at the site of application in one to three days (fig. 4).

SUMMARY

Evidence demonstrating the etiologic significance of human dander in the genesis of infantile eczema consists of: 1. Positive skin reactions to patch test with human dander in 15 of 20 infants and young children with eczema, whereas in 23 noneczematous infants and young children there was only one positive reaction to the patch test. 2. The fact that all children are exposed to human dander, either from their own scalps or from those of parents or others with whom they come in contact. 3. The prompt clinical improvement in 3 of 4 cases following the institution of measures directed at the avoidance of contact with human dander. 4. The reproduction of the lesions at will in 4 cases (out of four attempts) on a previously uninvolved skin area by exposure of this area to contact with human dander.

Heyburn Building.

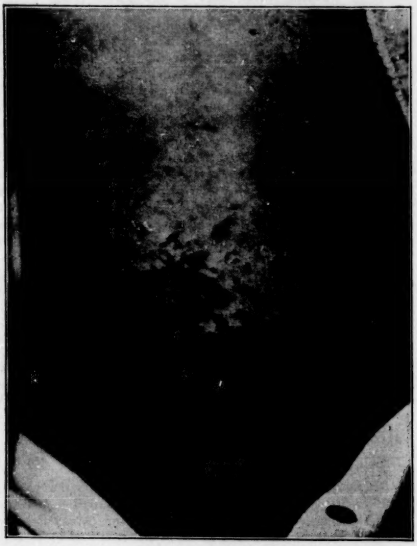

Fig. 4 (case 3).—Typical eczematous lesions produced on previously uninvolved area by exposure of this area to human dander.

Neurosurgery.—The specialty of neurosurgery was born at the turn of the present century and is unique in that it was largely the creation of two individuals, an Englishman and an American. Sir Victor Horsley laid its foundations, and Harvey Cushing built the edifice of special technic and knowledge that today stands as one of the notable achievements of modern surgery. Neurosurgery is concerned very largely with lesions within the cranium and the spinal canal that can be attacked surgically—new growths, certain types of inflammation and injuries. The neurosurgeon also treats lesions of the peripheral nerves, but these operations do not form a great part of his work.—Haagensen, C. D., and Lloyd, Wyndham E. B: A Hundred Years of Medicine, New York, Sheridan House, Inc., 1943.

Clinical Notes, Suggestions and New Instruments

MEDITERRANEAN ANEMIA

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Mediterranean anemia is a familial disease of blood which has claimed wide interest in the United States. While formerly it was thought to be a disease of childhood incompatible with longevity, it is now known to exist in milder forms in adults, who are able to live relatively normal lives. In spite of the many reports in the literature dealing with description of cases, we feel that this case because it is so typical should also be recorded.

Our patient was born of Sicilian parents in Augusta, Sicily, and came to this country at the age of 5. His mother and father are in their sixties and are living and well. One brother died at the age of 3 years from an unknown cause. The other brother is 21 years of age and is serving with the United States Army in the Southwest Pacific. His sister, aged 14, has a peculiar anemia associated with an enlarged spleen.[1] From a description of her condition as given by our patient, she at times shows a yellow coloration of the eyes; however, she has never been hospitalized for an illness.

Results of Gastric Analysis

	Total Acidity	Free Hydrochloric Acid
Specimen 1	25°	15°
Specimen 2	15°	0°
Specimen 3	28°	15°

As far as we have been able to ascertain, the parents' families have enjoyed good health. The maternal grandmother died at 85 and the grandfather at 80. The patient's mother had five brothers. One died at 35, as the result of an accident. Her four remaining brothers are in the Italian army. She also has three sisters; one living in New York is 60 years old and in good health; two are in their fifties, are living in Italy and are well. The paternal grandfather died at 83 and the grandmother at 79. The patient's father was an only child.

REPORT OF CASE

A youth aged 20 was admitted to the Brooke General Hospital, Fort Sam Houston, Texas, on June 22, 1943, because of a rash covering the extremities and trunk. The rash, which had been present for about four days, caused considerable itching. A diagnosis of poison ivy dermatitis was made and treatment instituted. One week later it had entirely disappeared.

At this time there were noted an icteric tint to the skin and an enlarged spleen, which prompted us to make further clinical and laboratory investigations. It was then learned that the patient had previously been admitted to another army hospital, in January 1943, because of sharp pain in the left upper quadrant of the abdomen, a sensation of abdominal fulness and fever. The discomfort lasted for about five days. He was hospitalized for forty-five days and then returned to duty.

A review by system revealed that the patient had suffered about twenty-five attacks of epistaxis during the past two years, each attack lasting for one or two days. There was no history of headaches, vertigo or sore throat. The patient stated that he could not run; running produced a sensation of fulness and sharp pain in the left upper quadrant. He also said that shortness of breath on exertion had been present since an attack of rheumatic fever two years before. At times his heart beats fast, but this is not related to exercise. During these periods of rapid heart rate there is some difficulty in getting his breath. He has never had edema of the ankles. There has been no cough; his weight has not changed in the last three years; his appetite is good, and bowel movements are satisfactory, with stools of a normal brown color. There is no pain on urination, nor is there nocturia. There has been no variation in the color of his urine. He sleeps well, but it is necessary for him to use one pillow. He says that he does not have numbness or tingling in his hands or feet, though he admits having occasional cramping pains in his calf muscles at night, which require him to get out of bed. He has had mumps and rheumatic fever. The rheumatic fever started in June 1941, and he was in bed for seven months. During that time there was swelling of his legs and feet, and he had continuous fever for about one month.

Physical examination showed his height to be 66½ inches (169 cm.), his weight 148 pounds (67.1 Kg.), and his blood pressure 120 systolic and 80 diastolic. He is well developed

Fig. 1.—Line of mass penciled on abdomen.

and well nourished and appears to be intelligent. The hair is coal black and the skin a bronze color. His face is broad and his eyes small and slanting. The frontals are prominent above the eyes, and the bridge of the nose is flat. The scleras have a yellow color, and the pupils react to light and in accommodation. The ears, mouth and throat are not remarkable; the thyroid is not palpable, and the thorax is well developed. No rales can be heard in the lungs. The heart is not enlarged; a soft systolic murmur is heard at the apex, but a thrill cannot be detected. A large hard mass is palpable in the left upper quadrant of the abdomen; it extends down to the umbilicus and moves with respiration. This is thought to be the spleen. The liver is not enlarged. The inguinal nodes show moderate enlargement. The urethral orifice is located about 1 inch from the tip of the glans penis and on the inferior surface of the shaft. No abnormalities of the anus and rectum are noted. The extremities are well developed. The reflexes are equal and active. The response to the tuning fork is normal.

Complete blood counts have been reported as follows: On June 22 the red blood cell count was 3,250,000, with 70 per cent hemoglobin; the white cell count was 6,750, with 61

1. La Bella, L., Middletown, Conn.: Personal communication to the authors.

per cent polymorphonuclears, 38 per cent lymphocytes and 1 per cent monocytes. On June 24 the red blood cell count was 3,070,000, with 65 per cent hemoglobin; the white cell count was 7,750, with 51 per cent polymorphonuclears, 47 per cent lymphocytes and 2 per cent eosinophils. On July 1 the red blood cell count was 2,850,000, with 70 per cent hemoglobin,

Fig. 2.—Slight osteoporosis around elbow.

and the white cell count 9,800, with 61 per cent polymorphonuclears, 38 per cent lymphocytes and 1 per cent monocytes. Poikilocytosis and anisocytosis were present. Macrocytes and microcytes were numerous, and many cells had the appearance

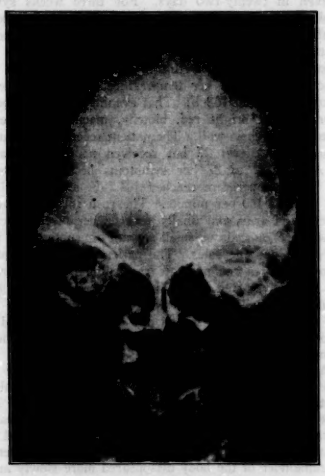

Fig. 3.—Calvarium from front.

of target cells. These target cells made up 10 to 15 per cent of the red blood cells on the smear. Nucleated red cells were counted and estimated to be 10 per cent of a smear. The Kahn reaction of the blood was negative. The result of a fragility test was reported as follows: Hemolysis began at 0.32 and was complete at 0.2 per cent, while the control began at 0.42 and was complete at 0.36 per cent. The platelet count was 375,000 per cubic millimeter. The icterus index was 23. Gastric analysis revealed the values given in the table. Special studies failed to disclose any sickling of the red blood cells. The prothrombin time of the patient was 19 seconds, and that of the control 20 seconds. There was no retraction of clot in twenty-four hours. Determinations of blood chemistry showed phosphorus content 4.5 mg. per hundred cubic centimeters, calcium content 9.6 mg., and nonprotein nitrogen content 35 mg. Urinalyses did not show the presence of albumin or sugar and there were no abnormalities of sediment; however, chemical studies revealed 8 mg. of urobilin per hundred cubic centimeters of urine. Roentgenograms revealed a thickening of the calvarium but no involvement of the inner table. This area showed a moderate degree of osteoporosis. A roentgenogram of the spine revealed that the trabeculae were all greatly widened. No other pathologic changes were noted in the bones.

COMMENT

This patient shows all of the characteristics described for Mediterranean anemia: Sicilian parentage, mongoloid facies, splenomegaly, and changes in the blood and bones.

This disease is found in inhabitants of the eastern Mediterranean countries, including Italians, Greeks, Armenians and

Fig. 4.—Thickened calvarium.

Syrians. A few exceptions have been discovered; for example, a Negro child [2] and a child of Chinese parentage [3] have been reported as having it.

The patient's brother who died at the age of 3 might have died of this disease, though we are lacking information concerning the cause of death. His sister, aged 14, has anemia and splenomegaly. There is a strong possibility that she is also suffering from Mediterranean anemia, as it is well recognized that this is a familial disease. The brother in the armed forces is said to be well, although there is a strong possibility that the hematologic characteristics may also be present in him, as has been shown by laboratory investigation in similar cases.[4]

The parents, grandparents, uncles and aunts of this patient, as far as we have been able to learn, have enjoyed good health, and death occurred only after the normal span of life had been completed. Mild forms of this disease may have existed in some of these persons. One or both parents of this patient, whom, unfortunately, we could not study, would necessarily show some of the traits of this disease. In some instances the trait has shown mendelian dominance,[2] while in others it has been

2. Dameshek, W.: Am. J. M. Sc. **205**: 643 (May) 1943.
3. Foster, L. P.: Cooley's Syndrome (Erythroblastic Anemia) in Chinese Child, Am. J. Dis. Child. **59**: 828 (April) 1940.
4. Smith, C. H.: J. Pediat. **20**: 370 (March) 1942. Dameshek,[2] Wintrobe, Matthews, Pollack and Dobyns.[1]

thought to be recessive.[5] Dameshek has suggested that the milder form of the disease is transmitted as a mendelian recessive and that more severe forms require homozygous genes. Obviously, further study will be needed to clear up this interesting point. That a mild form of the disease can exist in a person without anemia or osseous changes is fairly well established. In such instances the trait is detected by the presence of abnormal erythrocytes, such as anisocytes, poikilocytes, stippled cells, target cells, and an increased resistance to hypotonic solution of sodium chloride.[6]

The mongoloid facies often described in the literature is not a constant feature. It seems to occur more frequently in association with the more severe form, where there are osseous changes, and it can be considered a part of the disease only when such changes are actually present. The high cheek bones, prominent frontals and flattened bridge of the nose are characteristic. Occasionally, as suggested by Atkinson, this characteristic may be found in an otherwise normal person of Mediterranean origin. In such a case, oriental ancestors must be considered. Our patient has the mongoloid appearance, and we believe that it is probably due to the disease.

The hemogram is typical, in that a mild anemia with a low hemoglobin content was present, together with anisocytes, poikilocytes and stippled cells, nucleated red cells and target cells. An anemia may not be present; in fact, the red blood cell count may be normal or increased, as shown by cases described by Wintrobe[7] and Dameshek.[2]

The increased resistance to hypotonic saline solution is a constant feature and appears as the sole characteristic in persons with a mild form of the disease.[8]

Nucleated red blood cells are frequently not seen in adults, though our patient had a count of 10 to 15 per cent in each smear examined. Wintrobe was able to find them in only 1 patient after the injection of epinephrine hydrochloride.

Target cells were numerous in the smears in our case. Six slides were examined and found to contain 8 to 10 per cent of these peculiar cells. According to Barrett,[9] target cells are bowl shaped erythrocytes which have a central projection; such cells when viewed on the broad end would give the appearance of a target. This impression was shared by Bohrod[10] after studying smears with oblique illumination and bas relief photographs. Whether these cells are abnormal forms or merely young forms is not clearly understood. Bohrod has expressed the belief that they occur normally in the regeneration of red blood cells, because they are usually seen when the reticulocyte count is high and are found in the blood after hemorrhage. These cells are common in patients with sickle cell anemia and have been observed in patients with lead poisoning and with hepatic disease.

Our patient showed extensive osseous changes involving the cranium, vertebrae, clavicles, ribs and bones of the extremities. Osteoporosis was widespread in all of the bones mentioned. Heavy trabeculations and thinning of the cortex were conspicuous in the long bones of the extremities. Thickening of the cranial vault with widening of the diploe was present, and both the inner and outer tables were considered to be somewhat thin.

These observations are consistent with those described by Caffey[11] and others;[12] though vertical striations connecting the inner and outer table, as found in cases of the more severe form, namely Cooley's anemia, were not demonstrable in this case.

5. Dameshek.[2] Atkinson.[8]
6. Wintrobe, Matthews, Pollack and Dobyns.[7] Atkinson.[8]
7. Wintrobe, M. M.; Matthews, E.; Pollack, R., and Dobyns, B. M.: Familial Hemopoietic Disorder in Italian Adolescents and Adults Resembling Mediterranean Disease (Thalassemia), J. A. M. A. **114**: 1530 (April 20) 1940.
8. Atkinson, D. W.: Am. J. M. Sc. **198**: 376 (Sept.) 1939.
9. Barrett, A. M.: J. Path. & Bact. **46**: 603 (May) 1938.
10. Bohrod, M. G.: Am. J. M. Sc. **202**: 869 (Dec.) 1941.
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A SEVERE REACTION FOLLOWING ADMINISTRATION OF DIASONE

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Diasone (the disodium formaldehyde sulfoxylate derivative of diaminodiphenysulfone) is one of the sulfone compounds being given investigative use in the treatment of tuberculosis at the Mineral Springs Sanatorium and several other sanatoriums in the United States. It is not yet possible to make a conclusive report either on the therapeutic value of the drug or on its various side effects. However, one severe reaction was encountered during administration of the drug, and this case is being reported as a note of caution.

REPORT OF CASE

A white woman aged 19, whose condition had been diagnosed previously as far advanced pulmonary tuberculosis, entered the sanatorium on Aug. 1, 1943. The roentgenogram of the thorax made at the time of admission revealed a large cavity in the apex of the left lung and considerable exudative infiltration throughout the left lung. The patient was poorly nourished and appeared ill, but she had only a low grade fever. Her hemoglobin was 82 per cent (Sahli method), the leukocytes numbered 11,800 per cubic millimeter of blood, and the blood sedimentation rate was 27 mm. at the end of an hour (Cutler method). Urinalysis was negative.

Administration of diasone was begun on August 1, the date of the patient's admission to the sanatorium. Although an attempt to establish pneumothorax on the left side was planned, it was hoped that the drug might be helpful in clearing up the fresh exudative infiltration shown in the roentgenogram of the thorax. The dose of diasone was 1 Gm. daily for two days and then 1.33 Gm. daily for the next twenty days. A total of 28.67 Gm. was given in twenty-two days. For three weeks symptoms referable to the drug did not appear, and the patient began to show slight improvement clinically. An initial pneumothorax was established on August 10, without complications.

During the afternoon of August 22 the patient had a moderately severe chill, and her temperature, which had previously been normal, rose to 102 F. That evening her throat began to feel sore, and a bright red, blotchy, maculopapular eruption appeared on the chest wall. The patient received the usual dose of diasone on August 22 but received none after that date. From August 22 to 27 her symptoms became progressively worse. Her temperature reached 104.2 F. and her pulse rate was as high as 160 per minute. The rash spread all over her body, legs and arms and finally covered her face. Circumoral pallor was pronounced. A small amount of eruption was present on the palms and the soles. The patient's palate and pharynx were covered by a red punctate rash similar to that over the rest of the body. Her throat became extremely sore, so that she could not swallow. The tongue was furred. The patient became nauseated on the second day of the reaction and thereafter vomited bile tinged fluid frequently. Soon after the onset she complained of headache.

On August 26 the eruption became vesicular. Some of the vesicles were true bullae, each one containing several cubic centimeters of clear, straw colored fluid. On August 28, six days after its appearance, the eruption began to disappear with generalized exfoliation. Even the finger nails peeled. The patient's face cleared up in about three days, but the eruption on the remainder of the body disappeared more slowly and was followed by brownish, splotchy pigmentation, which gradually faded but was still present in some degree in February 1944, when this paper was written.

At the height of the reaction the patient's leukocyte count was 19,000 per cubic millimeter of blood; 82 per cent of the leukocytes were polymorphonuclear leukocytes, 10 per cent were

Dr. Pyle is on special assignment in Mineral Springs Sanatorium. The diasone used in this study was supplied to us by Dr. George Hazel of the Abbott Laboratories, North Chicago, Ill.

lymphocytes and 8 per cent were monocytes. Smears made from the throat showed mixed bacterial flora. Albuminuria, grade 1 (grading is on a basis of 1 to 4), was present and a few hyaline casts and pus cells were found in the urine.

Treatment was symptomatic and consisted of calamine lotion used locally, sedation, and the intravenous administration of fluids as needed. On August 27, 500 cc. of citrated blood was given intravenously. The patient's fever had already begun to decrease, but after the transfusion her other symptoms, especially the angina and persistent vomiting, began to improve rather dramatically. Her temperature and pulse rate continued to subside and had returned to normal by August 31, nine days after onset of the reaction.

COMMENT

It is felt that this reaction represents an idiosyncrasy to the sulfone compound diasone, even though the patient had received the drug continuously for three weeks previously without any untoward effects. The dosage was not large in comparison with the amount administered to other patients. Among the 63 cases in our series, this has been the only reaction of any severity encountered. On being questioned, the patient stated that during the fall of 1942 she was given a sulfonamide compound during an attack of influenza. She received 2 Gm. daily for four days. On the day after use of the drug was discontinued a generalized eruption developed which itched intensely and resembled hives. It lasted five days but was not accompanied by any systemic reaction. This is the only time the patient has ever taken a sulfonamide drug. It is possible that this eruption also represented a sensitivity, and the question arises as to whether the present reaction to a sulfone compound is related to the sensitivity to the sulfonamide. Kasselberg [1] reported a severe, pemphigus-like reaction following administration of sulfamerazine which closely resembles the case here described.

Council on Foods and Nutrition

THE COUNCIL ON FOODS AND NUTRITION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

GEORGE K. ANDERSON, M.D., Secretary.

CHEMICAL PRESERVATIVES AS HOME CANNING POWDERS

With the interest in home canning of fruits and vegetables being revived by the wartime shortages of food and the desire to preserve victory garden produce, chemical preservatives designated as "canning powders" or "compounds" are again appearing on the market. From time to time these have been condemned as unsafe and undesirable, but new ones always spring up under a new guise.

There have been a number of chemical compounds used in the past as food preservatives. Such harmless substances as salt, vinegar, sugar or spices are in good repute and are still commonly used today under appropriate conditions. Others, such as formaldehyde, salicylic acid, borax, phenol and monochloracetic acid, have been ruled out as food preservatives either by law or by common acknowledgment of their toxic properties. Boric acid was specifically declared unsuitable for use in foods in Great Britain by law in 1927, and foods containing this substance have been prohibited in interstate commerce in the United States for many years.

There are some chemical materials, however, which because of certain antiseptic properties attributed to them and because of their apparent lack of definite toxic effects have enjoyed periodic use as preserving agents. In this category are found sodium benzoate, the sulfur containing compounds of the type of bisulfites and acetylsalicylic acid. These chemicals are the ingredients commonly found in the proprietary compounds which are promoted as canning powders. They are marketed under such names as "Jiffy-Pak," "Fruit Kepe" and "Mrs. Price's Canning Compound." Another, "Frute-Lite" is recommended to keep fruit from darkening and might be used in canning. Not one of them is sufficiently reliable or effective under the conditions which may be met to warrant its use.

Sodium benzoate has a limited usefulness as a bacteriostatic agent in foods, and its presence is permitted in certain foods in amounts not greater than 0.1 per cent provided it is so declared on the label. Its toxicity is low, since it has been shown that as much as 0.5 to 1 gram can be taken daily without harmful effect. Its primary effect is merely a restraining one on bacterial growth; it cannot be depended on to check growth completely or to kill bacteria. As a result, its usefulness is limited to situations in which it is desired to hold food for a short period of time, and even this application is suited to only a few types of foods. Therefore sodium benzoate has no place in home canning procedures.

Sodium bisulfite or metabisulfite is the commonest chemical substance marketed as a canning powder at the present time. It depends for its bactericidal properties on the production of sulfur dioxide in an acid medium. For this very reason it is decidedly unreliable, because many of the home canned products are weakly or not at all acid, and these very ones are the potential sources of the deadly botulinus toxin. There are numerous other reasons why the use of bisulfites is decidedly unsatisfactory. While sulfur dioxide has antiseptic properties, one can never be sure of attaining sufficient concentration from the use of a tablet dropped into a canning jar. If adequate concentration is secured, and one never knows, it may be subsequently lost owing to leakage of the gas from an insecurely sealed can. Then again instances have been reported in which inadequate dispersion of the sulfur dioxide throughout the can permitted bacteria to thrive in pockets never reached by the gas.

It is true that sulfur dioxide has a limited usefulness in connection with foods, notably in dried fruits, in which its use prevents darkening rather than exerts a preserving effect. The possibility of toxic effects from the small quantities of this compound which would be ingested from these sources is very slight. Studies on this problem indicate that consumption of small amounts is innocuous. Its presence in home canned foods which would be eaten often could conceivably have cumulative effects with serious consequences. For another reason sulfur dioxide should be avoided in home canning of foods. This is because it has been found that its presence has the very undesirable effect of destroying a great share of the vitamin B_1 of the food. At the same time it must be admitted that sulfuring helps retain the ascorbic acid and carotene.

Acetylsalicylic acid in the form of the familiar 5 grain aspirin tablet has also been advocated as a home canning aid in concentration of one tablet to the quart. This compound is no more suitable for use as a home canning agent than any of the others mentioned. It has but feeble antiseptic properties on a limited number of micro-organisms, acting more as an inhibiting agent than as a killing agent. It certainly could not be relied on to rid a canned food of the rugged organisms which so often are responsible for food poisoning and botulism. Its toxicity to the consumer would be negligible in most cases, but it has the undesirable feature of causing distressing and often alarming symptoms in individuals who are sensitive to it.

From the foregoing discussion it should be evident that there is available today no chemical preservative which is satisfactory for home canning either as the sole agent used or as an adjunct to rapid heat processing methods. The primary danger of such methods lies in their ineffectiveness as sterilizing procedures, while the possibility of toxicity, although not great, must be kept in mind where such foods are consumed in sufficient quantities. The fact remains clear that, for proper home canning, reliance must be placed on careful attention to sanitary precautions and adequate methods of heating, with pressure cooking equipment for meats and vegetables and thorough cooking of fruits for the proper length of time as recommended in authoritative publications such as those of the U. S. Department of Agriculture or the various state extension services.

1. Kasselberg, L. A.: A Severe Pemphigus-like Reaction Following Administration of Sulfamerazine, J. A. M. A. **123**: 1035-1036 (Dec. 18) 1943.

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SATURDAY, JUNE 3, 1944

THE FIFTH WAR LOAN DRIVE

On June 12 the Treasury Department of the United States will launch the Fifth War Loan Drive with a campaign that will continue through July 8. The Treasury Department reports that taxes are providing less than half the money required to continue the war effort. The goal of the Fifth War Loan Drive is $16,000,000,000, to be raised entirely from investors other than commercial banks. Of the total, $6,000,000,000 is to come from sales of bonds to individuals. In the Fourth War Loan individual subscribers invested $5,300,000,000. The records indicate that more than 55,000,000 Americans own at least one war bond. No doubt every physician invested in bonds during previous drives and may be counted on to do his part in this drive also. The advertisers in all the publications of the American Medical Association have been emphasizing to our readers again and again the desirability of the war bond as an investment for physicians. The doctor of today is so driven in his service to his community in a great variety of ways that the problem of investing such surplus funds as he may have is a special one. He will find in the war bond the simplest and most direct answer to that problem.

In previous drives many a hospital staff, including the doctors, the nurses and all the lay employees, have cooperated for the purchase of specific equipment such as airplane ambulances, hospital service planes, field ambulances and similar medical equipment. That opportunity still exists and constitutes a focus around which organized medical groups may center their efforts.

Now more than ever there is tremendous satisfaction in setting quotas for extra purchases of bonds in terms of hospital equipment. A collecting station may be equipped for $4,200, a clearing station for $30,000, an evacuation hospital for anywhere from $65,000 to $90,000. Blood transfusion apparatus, hospital sterilizers, physical therapy apparatus and all such materials may well be the center of a drive for increased sales of bonds. If any group is especially ambitious, a hospital ship costs $3,000,000 and the medical equipment for the ship $40,000 additional.

Incidentally, a special citation signed by Surgeon General Norman T. Kirk is available for presentation to any person who sells more than twenty-five E bonds amounting to $5,000 or more for the purpose of providing hospital equipment and to organizations that sell more than $25,000 of E bonds earmarked for hospital equipment. Only a hospital plane may be named by a sponsoring group.

The American Medical Association as an organization purchases to the limit allowable of each issue of war bonds that is offered. The office of the Secretary of the Association has communicated directly with the officers of all state medical societies, urging them also to participate. Regardless of what other services a physician, a hospital or a medical organization may render in the war effort, the purchase of war bonds is an activity which benefits not only the purchaser alone but all of us.

DEFICIENT INSTRUCTION IN BIOLOGY IN HIGH SCHOOLS

The medical profession cannot be indifferent to widespread public ignorance of biologic facts and principles. The health of a people must rest in part on well disseminated knowledge of man's biologic friends and enemies, of a sound nutrition, of man's own bodily functions, of how and what he inherits, and of the sure relation between cause and effect. Much experience has shown that comprehension of these and other related matters is usually not obtained through short exposures to formal training in the various biologic subjects in our schools. A recent report[1] on this subject by a committee appointed by the Union of American Biological Societies indicates serious deficiencies which call for suitable action by those who can assist in obtaining adequate biologic instruction in our high schools.

The committee's report was based on information secured from 3,200 teachers of one or another biologic subject (biology, zoology, botany, physiology, general science) in 3,000 high schools located in all parts of the United States. In general, these schools were better than the average high school and had a larger than average enrolment. Nevertheless, only 53 per cent of these teachers said they had trained especially to teach biology; 14 per cent reported that in the curriculum of their school a unit of biologic study had been replaced by a social study within the past five or ten years; 39 per cent stated that extracurricular school activities interfered much or seriously with their teaching; only 70 per cent were teaching in rooms specially equipped for their subject; many teachers—apparently baffled

1. Riddle, Oscar, editor, and others: The Teaching of Biology in Secondary Schools of the United States: A Report of Results from a Questionnaire, Lancaster, Pa., Science Press, 1942, pp. 1-76.

by the limitations of time and facilities for teaching a science—largely abandoned effort to do so and focused instead on technologic items such as conservation, sanitation, forestry, health, nutrition and economic biology.

Realistic consideration of specific means of obtaining satisfactory instruction in real biologic science, followed always with reasonable amounts of its many practical applications, leads to the conclusion that this is not attainable unless the school offers two or more years of instruction in this broad field. Most high schools are small schools; in them it is only when two years of study in the field of life sciences is offered that there is probability that the subject will be taught by one who is trained in biology. Half of the high schools of the country have five teachers or less; three fourths of them have ten teachers or less. Yet the small school must or does offer twelve to twenty subjects. The few teachers in these schools are selected for their ability to teach subjects offered during two, three and four years; a one year subject is left to some one who does not have a full schedule of teaching. Again, the facts that all future citizens should know of plant science, animal biology and human physiology and hygiene, together with the many personally significant applications of these sciences, cannot be learned in acceptable degree by high school pupils in less than two years. Study of these life sciences for two years would account for only one tenth of the total effort of the high school pupil. Yet this field of study includes what is known of our physical selves, of our relation to the living environment of plants and animals and of the sources of our food, clothing and shelter. This is the subject of which Charles W. Eliot, chemist and former president of Harvard, said "The human race has more and greater benefits to expect from the successful cultivation of the sciences which deal with living things than from all the other sciences put together."

Men and organizations other than science teachers in high schools must actively assist a current effort of the Union of American Biological Societies to obtain adequate instruction in the life sciences in our secondary schools. A year ago the Association's Reference Committee on Hygiene and Public Health adopted the following resolution:[2]

Resolved, That the American Medical Association through its Bureau of Health Education encourage close cooperation between the constituent state medical associations and component county medical societies and the teachers of science in their respective communities to the end that intelligent instruction in science and biology be given the youth of America.

This type of cooperation, if actively practiced, may yield significant results. The properly expressed interest of the individual physician, or the active interest of the county medical society, may often tip the balance in favor of a two year place for the life sciences in the local high school.

2. Minutes of the House of Delegates: Report of Reference Committee on Hygiene and Public Health, J. A. M. A. **122**: 612 (June 26) 1943.

But much besides will have to be done before the words of Arthur D. Little are happily outdated: "In the past the world suffered grievously from lack of knowledge; today it suffers from its rejection or misapplication."

REGISTRATION UNDER THE HARRISON NARCOTIC ACT

Physicians, other than those in the armed services, who are registered under the Harrison Narcotic Act or under the Marihuana Tax Act must effect reregistration on or before July 1 to avoid a penalty. Each year, despite the annual warnings in THE JOURNAL, this requirement is overlooked by some physicians and unpleasant consequences follow. Failure to reregister promptly adds a penalty of 25 per cent to the tax payable and in addition subjects the physician to the possibility of a fine not exceeding $2,000 or to imprisonment for not exceeding five years, or to both. As an act of grace, the Commissioner of Internal Revenue has in past years given some tardy registrants the choice between paying sums by way of compromise, a procedure authorized by law, or of accepting criminal prosecution. If this procedure does not produce the required promptness in reregistration, the commissioner is required to institute criminal prosecution.

A physician in the armed forces need not reregister. If he receives an application form for reregistration, it should be returned to the office of the Collector of Internal Revenue together with a statement showing that he is in service and requesting that the registration number previously assigned to him be reserved. A physician on entering service should return all unused order forms to the collector's office and should dispose of all narcotics or cannabis on hand either by returning them to the wholesale concern from which purchased, if the packages are in unbroken form, or by transferring the narcotics or cannabis to another physician after having obtained permission for such transfer from the office of the Collector of Internal Revenue.

A physician entering service also is required to return the special tax stamp to the collector, who will mark the stamp "Business Discontinued" with the date and return the stamp to the physician to be retained in his files for a period of not less than two years. Where a physician is discharged from military service and reengages in civilian practice during the same fiscal year for which his registration has been canceled he will not be required to secure another stamp and pay a second tax for the remainder of that fiscal year. Such a physician should notify the office of the Collector of Internal Revenue, within thirty days of resuming practice, of his intentions to reenter the private practice of medicine. He should return the special stamp retained in his files to the collector so that the notation "Business Discontinued" may be crossed out and a proper notation made on it, indicating that private practice has been resumed.

ACCLIMATIZATION

One of the vital equilibriums in man is the equilibrium involved in the maintenance of body temperature. Both chemical and physical factors are operative in sustaining this steady state, but the exigencies of the present war have emphasized anew the necessity of practical knowledge regarding the functional adjustments in acclimatization. Already battles have been fought in all the latitudes of the earth; utilizing air travel, Kiska and Murmansk are only hours away from New Guinea and North Africa. Furthermore, the ordinary altitude of aerial combat has risen to several times that which was common twenty-five years ago, and the concomitant decrease in temperature has raised serious problems.

One of the adjustments to increased environmental temperature is an increase in red cell and plasma volume,[1] and the reversal of this change occurs when the subjects are exposed to cold. Apparently, this is a device for more effectively transferring body heat from the deep tissues to the surface, where it can be dissipated. The methods of removal of heat from the surface of the body change with surrounding temperature. Burton and his co-workers [2] point out that evaporation from the skin plays an important part in heat exchange in a warm environment, whereas radiation and convection are more significant in the cold. Cardiovascular alterations are important factors in successful acclimatization to heat. In a study of a large number of human subjects, Taylor, Henschel and Keys [3] have shown that pulse rate and rectal temperature, which rise unduly in response to work in a hot atmosphere, show the normal response after about four days under such conditions. This "training" effect will persist for some three or four weeks during which the subjects remain at ordinary temperatures.[4]

The significance of the loss of electrolytes in sweat was early emphasized by Moss,[5] who related the symptoms of muscular cramps of miners and stokers to the failure to replace the salts lost in the sweat. That some degree of adaptation with respect to the conservation of electrolytes occurs in profuse sweating is indicated by the observations of Dill and his associates; [6] they found that in extreme dry heat as well as in humid heat the volume of sweat is increased but that the salt lost through this channel is reduced. There is thus effected an economy of electrolyte while at the same time the benefit of heat loss through evaporation is secured.

That the recognized chemical and physical factors ordinarily operating in the body in acclimatization, may be subject to less well known influences is indicated by the report of Wolkin and his associates [7] in the Medical Corps. These officers describe a type of collapse not identical clinically with heat stroke or heat exhaustion but apparently correlated with functional failure of sweat glands on the body below the level of the neck. A consideration of manpower efficiency in the present emergency forcibly directs attention to the physiologic chemistry of acclimatization.

1. Bazett, H. C.; Sunderman, F. W.; Doupe, J., and Scott, J. C.: Am. J. Physiol. **129**: 69, 1940.
2. Burton, A. C.; Scott, J. C.; McGlone, B., and Bazett, H. C.: Am. J. Physiol. **129**: 84, 1940.
3. Taylor, H. L.; Henschel, A. F., and Keys, A.: Am. J. Physiol. **139**: 583, 1943.
4. Robinson, S.; Turrell, E. S.; Belding, H. S., and Horyath, M.: Am. J. Physiol. **140**: 168, 1943. Henschel, A.; Taylor, H. L., and Keys, A., ibid. **140**: 521, 1943.
5. Moss, K. N.: Proc. Roy. Soc. London., B **95**: 181 (1923-24).
6. Dill, D. B.; Jones, B. F.; Edwards, H. T., and Oberg, S. A.: J. Biol. Chem. **100**: 755, 1933. Daly, C., and Dill, D. B.: Am. J. Physiol. **118**: 285, 1937.

Current Comment

SEEING-EYE DOGS AND ELECTRICAL EQUIPMENT FOR THE BLIND

In this issue of THE JOURNAL (page 321) appears an article by Brig. Gen. Charles C. Hillman of the United States Army medical department calling attention to the rehabilitation of the blind and the deafened. Some months ago THE JOURNAL noted that the total blinded in the first world war had been well under 500 for both Great Britain and the United States. In the present war, according to the statement by General Hillman, there were only 73 totally blinded in the Army to March 1, 1944. It will be observed from General Hillman's report that it is estimated that not more than 10 per cent of the blind would benefit by the use of a so-called seeing-eye dog. Nevertheless, on May 25 the President signed a bill which had been passed by the House and the Senate appropriating $1,000,000 to be used by the Administrator of Veterans' Affairs under such regulations as he may prescribe "to provide seeing-eye or guide dogs trained for the aid of blind veterans who are entitled to disability compensation or pension under laws administered by the Veterans' Administration, and to pay all the necessary expenses of such veterans incurred in obtaining and becoming adjusted to such dogs and in traveling to and from their homes for that purpose." This action was taken by the House and the Senate and the President, notwithstanding that competent representatives of all the agencies concerned, including the Veterans' Administration, indicated that the need for seeing-eye dogs was not beyond what could now be provided by existing private agencies in this field. Incidentally, Congressman Cole of New York in discussing the legislation was greatly distressed lest the cost of supplying a dog would be about $1,000 and that therefore only 1,000 blind veterans could be accommodated. He inquired "how the Veterans' Administration is going to determine which 1,000 of the blind veterans will receive dogs." Fortunately the rationality of such legislation was saved at perhaps the last moment by the addition of an amendment which says that the funds may be used "also to provide such veterans with mechanical electronic equipment for aiding them in overcoming the handicap of blindness." Under this amendment blind veterans may

7. Wolkin, J.; Goodman, J. I., and Kelley, W. E.: Failure of the Sweat Mechanism in the Desert, J. A. M. A. **124**: 478 (Feb. 19) 1944.

be assisted with "talking-book machines, braille typewriters, watches, electrical recording machines, which are used for writing letters, and other electrical and mechanical appliances and devices being developed for the blind." These, according to the American Foundation for the Blind, would be of great help and in some cases even more desirable to the blinded veterans than seeing-eye dogs.

AMERICAN JOURNAL OF PSYCHIATRY: CENTENNIAL ISSUE, 1844-1944

The centennial anniversary issue of the *American Journal of Psychiatry* presents a wealth of material of interest to psychiatrists, physicians and the public. The literary activity of the *Journal* for the past hundred years is minutely analyzed in a paper by William Rush Dunton Jr. The growth of the science of psychiatry, the changing concepts and the striking personalities responsible for this growth pass in a skilfully recorded review. Clarence O. Cheney contributes an interesting biographic sketch of that undeservedly forgotten Samaritan Dorothea Lynde Dix. In "Some Trends in Psychiatry" Abraham Myerson traces the psychiatric thought through Kraepelin, Freud and Pavlov. Alan Gregg, in a humorous but all too true history of Preserved Jones, poses a problem of the specialist for the consideration of specialists. The centenary number summarizes admirably the accomplishments of the publication during a hundred years of its existence. The American Psychiatric Association is congratulated on the completion of its first century of activity and on the excellence of its official publication.

POSTWAR PROGRAMS OF CHILD SECURITY

The size of the future population of the United States and the birth rate after the war are problems of much concern. The subject was included in a round table discussion on population trends and postwar policy.[1] Support and security for children as the best means of encouraging an increased birth rate quickly became the core of the discussion. Existing sources of support and security for children, it was stated, could be classified under three general categories: (1) the family budget, (2) direct financial assistance to families and (3) service furnished from the public exchequer. A "mother's wage" to be paid for rearing children, beginning with $15 a month for one child and rising to $100 a month for five children on a nationwide scale, it was emphasized, would cost more than six billion dollars. The "security planners" try to find in cash the answer to all of humanity's problems. They listen with reluctance to the disadvantages resulting from a procedure that would make government stand in loco parentis to all the children. Physicians, with their biologic background, insist that programs recognize the qualitative factor as well as the purely quantitative factors involved in security. An increased birth rate at the moron level would doubtless be a costly program.

1. Kiser, Clyde V.: Implications of Population Trends for Postwar Policy, Milbank Memorial Fund Quarterly **22**: 111 (April) 1944.

POLIOMYELITIS ELECTROMICROGRAPHS

Attempts to demonstrate poliomyelitis virus by means of an electron microscope have been reported by Melnick[1] of the Section of Preventive Medicine, Yale University. By means of differential ultracentrifugation a macromolecular fraction can be isolated from the stools of normal children and of patients with poliomyelitis.[2] These giant molecules are not sedimented at 18,000 revolutions per minute for twenty minutes but are thrown down at 39,000 revolutions per minute for sixty minutes. When obtained from normal stools, this sediment is not pathogenic for rhesus monkeys. In sediments obtained from poliomyelitis patients the electron microscope reveals the presence of various types of essentially spherical particles varying from 10 to 100 millimicrons in diameter, together with rod shaped (or threadlike) particles 15 to 35 millimicrons in width and 250 millimicrons in length. Rod shaped particles of the same size are found much less frequently in nonpoliomyelitic stools. Similar threadlike particles are also found in the stools of Java monkeys before infection with poliomyelitis virus, with a considerable increase in the number of these threads after intracerebral inoculation. Threadlike particles also are seen in macromolecular sediments from the intestinal contents of Swiss albino mice, known to be intestinal carriers of mouse encephalomyelitis.[3] Melnick's results have been confirmed (or anticipated) by Swedish investigators,[4] who not only demonstrated threadlike particles in poliomyelitic stools but were able to demonstrate the same structures in purified preparations from human poliomyelitic spinal cords and from murine encephalomyelitic brains. Relationship of these threadlike particles to the virus of poliomyelitis is difficult to determine at the present time. According to Melnick's present working hypothesis these minute rods are the virus of poliomyelitis, with nonpathogenic mutants occasionally found in the intestinal contents of normal persons. Thus far the serologic specificity of these macromolecular rods has not been reported.

SAFE PRACTICES FOR USING COMBUSTIBLE ANESTHETICS

Combustible anesthetics are employed almost constantly in operating rooms. A few serious accidents from explosion or fire have occurred. The National Fire Protection Association[1] has recently issued an official report on recommended safe practices for the use of combustible anesthetics in operating rooms. Included are discussions on mixtures of complex gases, electrical systems, electrostatic spark discharges, hazardous locations, ventilation, and storage and handling of gases. These recommendations have resulted from extensive investigation of the problems and should receive careful study by all who are responsible for installations in operating rooms and the procedures associated with the administration of anesthesia.

1. Melnick, J. L.: J. Immunol. **48**: 25 (Jan.) 1944.
2. Melnick, J. L.: J. Exper. Med. **77**: 195, 1943.
3. Theiler, M., and Gard, S.: J. Exper. Med. **72**: 79, 1940.
4. Tiselius, A., and Gard, S.: Purification of Poliomyelitis Viruses, Uppsala, Almquist and Wiksells Boktryckeri, A.-B., 1943.

1. Quarterly of the National Fire Protection Association **37**: 74 (April) 1944.

MEDICINE AND THE WAR

NAVY

MEDICAL AUDIOVISUAL EDUCATION IN THE U. S. NAVY

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In Charge, Section of Audio-Visual Education, Division of Preventive Medicine, Bureau of Medicine and Surgery
WASHINGTON, D. C.

There is a tendency—well nigh universal but particularly well developed among doctors—to obscure one's meaning by choosing polysyllabic Greek or Latin words in place of the simple, homely Anglo-Saxon synonyms. I would therefore like to have you think with me for a few minutes, not about "audiovisual education" but about "medical teaching aids," their development and their use in military and civilian life.

War has brought home to us many truths, and one in particular has been impressed on us—the art is long, the occasion instant. We have found that modern war can be waged only by skilled, trained men. Too well we know that it takes time to produce such men—to shape their minds, to guide their hands in the technics of the arts and sciences so that each individual acts for the best interests of his country and of humankind. Such guidance is in the broad sense education, which is said to reach its highest form when the skilled instructor is on one end of a log, an attentive student on the other.

Unfortunately, this favorable situation is not universally existent today. In time of war there develops a scarcity both of logs and of teachers, and there press on us also the strategic limitations of time. Particularly are these factors potent in the military medical scene.

There is no scarcity, however, so far as pupils or needs are concerned. Consider, for a moment, the health and medical indoctrination and training burden the Navy must successfully carry today:

First, every man and woman in the Navy and in the Marines, afloat and ashore, must follow a productive and understandable regimen of personal hygiene.

Second, every man jack must possess a working knowledge and practical ability in the fundamentals, at least, of first aid. Manifestly, the teacher-log-student relationship must be somewhat altered when the class comprises more than two million persons. Yet such mass educational technics as may be applied must to a considerable measure be personalized in their effect.

Third, keeping in step with the growth of our seven ocean Navy, there has been a tremendous expansion of its Medical Department. Today, in fact, the Medical Department is larger than the prewar Navy in its entirety. Obviously, this has meant a tremendous increment in ancillary medical personnel, especially the hospital corps. Here the task has been that of taking completely untrained youths and turning them into men and women capable not only of assisting medical officers under organized ship and hospital conditions, but also of functioning not infrequently completely "on their own" aboard small craft, with invasion forces and so on.

The average time now allotted to that training is nine weeks. This includes six weeks in hospital corps school and three weeks in hospital wards. To take a boy from high school, farm or factory and give him training equal to that of a graduate nurse in nine weeks is impossible, but it has to be done or at least approximated.

Finally, as the bulk of our medical officers, including myself, have come from civilian professional ranks we have been faced with the necessity of learning the specialized art of military medicine.

But the technology of war finds a partner in the healing arts which takes scientific advances in stride. As our bombers carry ever heavier loads higher and farther, the flight surgeon raises the threshold of man's ability to carry through such missions. As our submarines prowl ever closer to the enemy ports, their "clean sweep" reflects the medical department's care in crew selection, hygiene, diet and working environment. Obviously, these and the multitude of other new and developing problems dictate a continuing, aggressive "postgraduate" training of each and every medical officer, be he surgeon or internist, authority or general practitioner.

Patently, every good device and technic must needs be utilized to aid in the training of a total Navy personnel fit to fight and fit to win. However, in the consideration of medical teaching aids the emphasis should be placed on the term aids, for the purpose is not to supplant but to supplement the work of the teacher.

While medical teaching aids embrace a wide and interlocking variety of devices, ranging from the simple blackboard sketch, the printed chart, the lantern slide to the sound-color-motion picture, I shall consider here only those of a more advanced audiovisual character. And perhaps rather than attempting a didactic exposition of what such an audiovisual device is, I can best describe by citing examples in terms of the aforementioned problems.

Personal hygiene is the first line of defense in the carrying out of the Navy Medical Department's mission "to keep as many men at as many guns as many days as possible." The health of the Navy as a fighting entity is partially an individual responsibility, dependent on every man's obeying the basic laws of personal hygiene. The several films on this subject which have been produced by the Navy serve as a focal point of a continuing effort to inculcate knowledge of the rules of personal hygiene and to indoctrinate every man and woman in the Navy to the point where he or she obeys automatically the basic precepts of bodily cleanliness, exercise, sleep, care of the teeth, nutrition and reporting for medical care at the first intimation of illness.

It is not alone facts, however, which produce such results. It has been found in practice that holding equal importance with the fact—the "what to do"—is the "why." And even in such mundane matters as personal hygiene it has been found to add to the

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effectiveness of the health training effort to appeal to the men as shipmates, to draw on the spirit of cohesiveness which counts for so much in the fighting team and to build a belief and a feeling of security in the ability of the Medical Department to hold up its end.

The educational approach to the problem of venereal disease is a prime example of the role of motion pictures in health indoctrination and a specially pertinent case in point when it becomes necessary to go beyond the facts to produce a desired result. The straightforward facts of syphilis, gonorrhea, and chancroid as diseases need to be highlighted; and the deeply misunderstood facts of sex hygiene must be clarified. But although lack of knowledge may be the basic cause of many cases of venereal disease, it is not by any means the only cause.

Many a man who knows the basic technics necessary to avoid venereal disease nonetheless falls a victim to it. Avoidance and prevention of venereal disease—and all that it implies—involves a complexity of factors environmental and within the man. By and large, these factors are outside the control of the Navy, for they bear on the man from nonnaval sources and during liberty hours. Prevention of venereal casualties, therefore, is largely in the hands of the individual sailor or marine, and it becomes one of the functions of audiovisual education to attempt to bring to his consciousness, both intellectually and emotionally, the peculiar role which he plays, how his role affects the Navy as a whole and how his role affects his personal life and his future. Adult restrained sexual behavior can be taught—and must be taught—if our civilization is to endure in full vigor.

Our experience suggests that motion pictures can further proper emotional conditioning—or they can help destroy it. I believe that psychologically we have in the motion picture a most powerful tool, and that it can be and that it will be used to help better the behavior patterns of all of us. We are a part of all that we see; all that we see is some part of us. The average American spends a good many hours each month looking at motion pictures. It seems doubtful that all of these films are pure opium to his senses. Witness—as only one example—our habits of dress and style, largely "made in Hollywood."

Another formidable all-Navy training task is the teaching of first aid. Six motion pictures and a set of sound slide films have been made specifically for Navy personnel. Every one in the Navy must be able to give elementary first aid. Because professional medical care is not immediately available in all the watertight compartments of a fighting ship, the sailor himself must know the simple rules for the arrest of hemorrhage, dressing of wounds, splinting of fractures and safe transportation of the injured.

Those who go down to the sea must know how to give artificial respiration. To train over two million men in less than two years even in the most simple arts of first aid has proved a tremendous task which is never done. Many a holder of a Purple Heart is thankful his buddy saw and studied the technics of first aid with the benefit of the close-ups of a motion picture.

Beyond first aid and personal hygiene must always stand the professional medical organization. In the training of the basic echelons of the Medical Department lies a major field of action for audiovisual education.

Medical professional training of enlisted personnel—the hospital corps—is accomplished by a combination of intensive didactic courses in hospital corps schools and by practical hospital apprenticeships. Time severely limits both types of activity. The "learn by doing" technic is compressed to its limits. It is here that motion pictures enter and make possible basic instruction in technics and give as well a certain over-all concept immeasurably valuable and necessary to the intelligent student.

The Bureau of Medicine and Surgery is at present making a series of films under the general title "Care of Sick and Injured by Hospital Corpsmen." Each film in the series is a short (ten to twenty minute) but clear exposition of some basic nursing procedure, including how to take a blood pressure, bathing the bed patient, how to take and record temperature, pulse and respiration, how to do surgical dressings in the ward, how to recognize and care for neuropsychiatric patients, and isolation nursing technics for contagious patients. The list is being extended because the films are proving, in practice, to be extremely valuable. I would expect that civilian nursing instructors will find them most useful when they can be made available, post bellum.

Motion pictures are playing a modest but definite role in the training of our medical officers. As a first step we have reviewed all available medical motion pictures and will continue to review current productions with a view to making available all films which will add to the professional information of the medical corps. Beyond this we have undertaken to produce motion pictures on topics of special importance to the Navy at war. Films on emergency amputation, on the use of skeletal fixation in fractures, on war injuries of the head, on the use of serum albumin and dried plasma, have been or are being made. A film on "Clinical Malaria" is complete and should prove of real value in giving medical officers a basic indoctrination and attitude toward this the most important of all the infectious diseases.

In time of war the trend of medical activity is of necessity largely shaped by the character of military operations. In times past, however, reports of conditions at the front not only were substantially delayed but had to come in words, occasionally illuminated by still photographs. Today it is possible to report from the battle areas in terms of color motion photographs the actual conditions under which medicine and surgery must be practiced. The implications are far reaching, and in order to realize some of them, at least, the Medical Department of the Navy has activated four production units for medical motion picture photography. Each unit is equipped to take color motion picture films and stills of professional quality. Two units are located at large naval hospitals within the continental limits of the United States and two are overseas, one in the Atlantic theater of operations and one in the Pacific.

Documentary films and still pictures of the treatment of casualties from the moment of injury to eventual return to duty—followed step by step from the first aid battle station to the sick bay, to the hospital ship or base hospital to the States—are now being made. All the multitudinous activities of the Medical Department of the Navy are subject to recording on film, not only for historical purposes, but also for the immediate information of medical units in action and to serve as the nucleus for many instruction films.

I trust it would not be out of order at this point to insert a few miscellaneous remarks about instructional sound-on-film motion pictures, with particular reference to their use by orthopedic surgeons.

When one listens to the radio or to a lecturer who is not illustrating his talk, only the sense of hearing is involved. One's eyes may in fact prove a distracting influence, and many persons find that attention to the matter in hand demands that their eyes be closed and visual impressions reduced to a minimum. Unfortunately, the run-of-the-mine lecturer's style and delivery is likely to make the closed-eyes technic somewhat dangerous.

The man who is learning by reading or by looking at a silent motion picture or other graphic presentation, on the contrary, finds his attention distracted by extraneous sounds. Further, even when illustrations are used with the textual matter, their time-space relationship is such that close integration is virtually impossible.

But those who make entertainment films, and more recently those who make instructional films, have found that audience interest is highest and complete attention is most easily obtained if sight and sound are synchronized to complement each other. Learning by hearing and learning by seeing are interlocked in time and space. The listener hears and sees the subject as it is unfolded; there is no competition between stimuli for the center of consciousness. The only escape from participation in such teaching is to walk out.

Effective instructional films of high quality are neither cheap nor easy to produce. All of us know how many hours of work go into a good illustrated lecture (but let me hasten to say that similarity between a good instructional film and an illustrated lecture is largely coincidental). Multiply such efforts tenfold, even a hundredfold, and one can gain some conception of the amount of preliminary preparation required before a single camera can grind. Specific attention must be given to a wide variety of elements: What is the film's mission? To whom is it directed? By whom will it be used? How does it fit into the training or informational plan? What is the specific content? What production technics are indicated (such as live sound photography, animation, color)?

These basic decisions reached, and an action outline of the proposed film carefully prepared, the next step becomes the preparation of a detailed shooting script. This is a task requiring training and experience and a certain talent that can translate into clear, concise language both the graphic (or visual) and the verbal (sound) content of the proposed film in such a manner as to result in the ultimate creation of the desired result after the photographers, actors, soundmen and other technicians have brought their efforts to bear. In short, it is distinctly an exception to find a good teaching film that has not first been born on paper, after a prolonged period of labor on the part of technical experts and an experienced medical script writer.

As one who has been through this rather debilitating process a fair number of times recently, I would say this—with the hope of saving some one from a heart-rending experience: Beware of taking a camera and trying to film an instructional picture without first writing a script and reviewing the practical elements of the problem. Delay, frustration, failure and an unwarranted prejudice against films as teaching aids are more than likely to result from shooting "off the cuff." With all due respect to my colleagues' abilities, it is a fact that, while many physicians are good amateur photographers, only rarely do they even approach true professional photographic ability. Just as it takes years to acquire surgical technical skill, so it takes comparable time to become a first rate professional motion picture photographer, producer, director or script writer. These are special fields of special skills. The surgeon who is making teaching films should demand that his technicians possess such skills.

Let us suppose that a script has been prepared and that all the scenes called for have been photographed. The last stage in film production has not yet been reached. The cutting room floor has not only been the last resting place of many a promising actor's face, but also has been (or should have been) the interring ground of many an ill thought out medical instructional film. After cutting and editing come the final rewriting of the narrative, the recording of the sound track and, finally, production of the combined sound on film print. All of these processes demand particular abilities and special equipment. And the net result is that production of good teaching films is time, energy and money consuming.

Production costs run from two to twenty thousand dollars per reel, perhaps an average of eight or ten thousand dollars for each ten minutes of screen time. Yet a film on venereal disease which costs, let us say, $30,000 is seen by two million or more men at a per capita cost of 1.5 cents. If a film on the management of war injuries of the head—costing perhaps $15,000—leads to the saving of even one American sailor's life, it is worth every cent it cost, and more.

Those of us who teach orthopedic surgery are becoming more and more aware of the value of instructional motion picture films. If, for example, we are teaching students the analysis of gaits, with motion pictures we can show examples of all the characteristic gaits, the muscular weakness, the nerve or joint involvement and so on. Using clinical cases such a demonstration would be most difficult if not impossible to arrange and could not be easily repeated. One properly made film on this subject could be utilized by all medical schools and in many hospitals where postgraduate intern instruction is being carried on.

In conclusion, I would like to bring to attention as succinctly as possible the following points:

Although physicians have made and may well continue to make many amateur or semiprofessional motion picture films, there is an unfilled and pressing need for basic teaching (sound motion picture) films of the highest professional quality.

The value of such films in undergraduate and postgraduate teaching cannot be overestimated. Osler himself could not in an hour's clinical lecture indoctrinate a class of medical students in the protean aspects of typhoid or syphilis as well as a good teaching film could do it.

Osler, alas, is no longer available except in a textbook form. Good films on these and all the other medical subjects which students must learn can be and will be made available in the future.

How is that to be done? Government sponsored agencies may be forced to assume the burden, but a larger part of the task rightfully belongs to nongovernment institutions, particularly medical schools and teaching hospitals. Consider this possibility for a moment: If each medical school produced only one

good teaching film every year—pooling resources and avoiding duplication of effort—we would very soon have a valuable teaching library of medical films. The prerequisites for such a happy situation are an interest and will for the task plus cooperative, intelligent planning, plus the basic financial means. The Academy of Orthopaedic Surgeons numbers in its membership teachers in all the accredited medical schools. They can exert, if they choose, sufficient effort to influence favorably the course of professional education. Cooperation, vision and leadership are required to initiate such a program. I leave the challenge with you.

ARMY

MEDICAL-SURGICAL CONFERENCE AT TORNEY GENERAL HOSPITAL

A medical-surgical conference was recently held at the Torney General Hospital, Palm Springs, Calif., which was attended by 105 medical corps officers in the Southern California area to discuss wartime problems of their profession and exchange ideas on most recent methods of treatment. The conference was the first of its kind to be held in the Ninth Service Command. Capt. E. M. Papper, chief of anesthesiology at Torney General Hospital, presented a paper on "Anesthesia for the Burned Patient." Capt. John A. Hookey, dermatologist of Torney General Hospital, who recently returned from the Southwest Pacific theater of combat, estimated that at least 50 per cent of their hospital admissions were patients with skin diseases and that 25 per cent of soldiers evacuated from that area to the United States presented dermatologic problems. Dr. John Wilson of Los Angeles, civilian consultant in orthopedic surgery of the Ninth Service Command, Lieut. Comdr. Harry Macey, Norco Naval Hospital at Corona, and Major Donald B. Slocum, chief of the orthopedic section of Torney General Hospital, participated in the presentation of fractures, simple and compound. Major F. M. Willett, chief of the medical service at the Station Hospital, March Field, discussed coccidioidomycosis. Present concepts of virus disease with the possibility of postwar vaccine for poliomyelitis were discussed by Major E. F. Pearson of the 22d General Hospital. Capt. John R. Upton of the Station Hospital, Yuma Army Air Field, in presenting his paper on "Blood Banks and Blood Plasma," advocated the establishment of nonprofit blood banks with voluntary donations as a postwar contribution to American medicine.

Other papers of notable importance in their respective fields were "The Present Status of Induced Fever Therapy" by Major E. M. Honke, chief of the urologic section at Torney; "Experiences with Excision of Pilonidal Cysts and Primary Closure," by Major Hall Seely, chief of general surgery, Station Hospital, Santa Ana Army Air Base; Clinical Pathological Conference, two sessions, Lieut. Col. Hans F. Smetana, chief of laboratory service at Torney; "Pilonidal Cysts at March Field," Major M. E. Pickworth, chief of surgical service at March Field; "Penicillin and Clinical Demonstration of Its Use at Torney General Hospital," by Major Philip B. Davis, penicillin officer; "Effects of Heat on the Human Organism," Capt. I. R. Gold, 98th Evacuation Hospital, and "Coronary Occlusion," Major R. A. Steven, chief of the cardiovascular section at Torney.

Col. A. B. Jones, commanding officer of the hospital, gave the welcoming address, and Col. Maurice A. Selinger, chief of the Medical Service, and Lieut. Col. Meredith G. Beaver, chief of the Surgical Service, presided as chairman. Report of successful treatment methods now in practice throughout the Ninth Service Command was given by Col. John B. Flick, surgical consultant for the command.

Capt. Waltman Walters, chief of surgical service of the Norco Naval Hospital, Capt. Samuel D. Daniels of the Medical Staff of Torney and Lieut. Joe H. Jewitt of the urologic section of Torney led the open discussion periods.

ARMY NURSE CORPS

The War Department recently announced that Major Gen. Norman T. Kirk, Surgeon General of the Army, has authorized full time employment in military hospitals throughout the nation of certified graduates of Volunteer Nurse's Aides classes sponsored by the American Red Cross. This new group will be known as "Army Nurse's Aides" and will have uniforms and insignia of their own. To qualify for appointment as such an aide the applicant must have been certified as having done 150 hours in the accredited American Red Cross classes. It is also necessary to have indefinite leave of absence from the Volunteer Nurse's Aide Corps of the American Red Cross. Col. Florence A. Blanchfield, superintendent of the Army Nurse Corps, stated that the addition of these trained civilian employees will help the over-all nursing situation. Some of the duties of the Army Nurse's Aides will be to make beds, give baths, take temperatures, pulse and respiration, help to apply casts and slings, assist with unsterile dressing, give evening and morning care, accompany visiting nurses, serve in casualty stations and first aid posts and do their part in evacuations.

Employing certified volunteers on a full time basis will be left to the discretion of the commanding officers of hospital installations. Establishment of the Army Nurse's Aides will not eliminate the volunteer on a part time basis who is still a member of the American Red Cross Volunteer Nurse's Aide Corps. The full time employee will be placed on a United States Civil Service status and live in the quarters provided by the hospital at which she is stationed.

In addition to living expenses and laundry, the Army Nurse's Aide will receive $75 a month. The aide will provide her own uniform, a white blouse and skirt, with a pinafore of blue and white stripes. She will wear on the sleeve of her blouse a blue circle with a white center having a red embroidered caduceus over which will be the words "Army Nurse's Aide." A smaller circle without the lettering will be on her white cap.

President Roosevelt has signed an executive order setting the stipend of senior cadet nurses in government hospitals at $60 a month. The Army Nurse Corps will assign the cadets to thirty general and station hospitals. Plans call for detail of 50 students to each hospital for six month tours of instruction, but entrance of students will be effected at semimonthly intervals to avoid handling of large numbers of incoming and outgoing senior cadets at any one time. A director and assistant director of cadets has been designated at each hospital which will receive the students to supervise the senior cadets.

ARMY AWARDS AND COMMENDATIONS

Lieutenant Colonel Garfield G. Duncan

Lieut. Col. Garfield G. Duncan, formerly of Philadelphia, has been awarded the Legion of Merit. The citation accompanying the award read "By his professional skill and devotion to duty in the performance of outstanding services in the Southwest Pacific Area from Aug. 28, 1943 to Jan. 7, 1944 he made an important contribution to the prosecution of the war in that theater." Dr. Duncan graduated from McGill University Faculty of Medicine, Montreal, in 1923 and entered the service Jan. 6, 1942.

Captain Eugene Moskowitz

Captain Moskowitz, formerly of Mount Vernon, N. Y., was recently awarded the Soldier's Medal for "courage . . . with utter disregard for personal safety" in proceeding through a severe snowstorm by air to perform an emergency operation on an enlisted man, thereby saving his life. The award was made by Brig. Gen. James A. O'Connor of the Northwest Service Command. Dr. Moskowitz graduated from the University of Basel Medical Faculty, Switzerland, in 1937, entered the service June 19, 1941 and is now serving as chief of the orthopedic service at a station hospital somewhere in the Alaskan theater.

Captain Milton Drexler

A recent announcement by the War Department states that Capt. Milton Drexler, formerly of New York City, has been awarded the Legion of Merit. The citation accompanying the award read "Serving as surgeon of an infantry battalion engaged in operations near Salamaua, New Guinea, from July 16 to Sept. 12, 1943 he conducted his medical section with outstanding efficiency and worked long hours with great fidelity. During a rapidly changing tactical situation and in terrain presenting unusually difficult aspects he quickly established medical aid stations in locations best suited to serve the sick and wounded. On several occasions he went under enemy fire to forward perimeters to treat wounded men who could not immediately be evacuated. When not actually engaged in caring for the wounded, he instructed troops in the importance of camp sanitation and by this means greatly reduced the rate of sickness. His gallant conduct during this period was an inspiration to others, and his exceptional services were a substantial contribution to the welfare of our troops." Dr. Drexler graduated from the University of Bern, Switzerland, in 1937 and entered the service June 26, 1941.

Captain Mark D. Holcomb

The Legion of Merit award was recently bestowed on Capt. Mark D. Holcomb, formerly of Whitefish, Mont. The citation accompanying the award read "As assistant regimental surgeon during the Sanananda, New Guinea, operations he volunteered for and successfully completely from Jan. 14 to 18, 1943 a hazardous and difficult journey through heavy jungle terrain and over dangerous waters to procure and deliver vitally needed medical supplies. On several occasions during the delivery of the supplies and while assisting in surgical operations and medical care of troops he was subjected to intense enemy fire. During his return trip from the advanced area he treated and aided in carrying a wounded soldier although twice pinned down by enemy fire. His conspicuous service, tireless activity and unremitting devotion to duty made an important contribution to the morale and welfare of our troops." Dr. Holcomb graduated from the University of Louisville School of Medicine in 1936 and entered the service Sept. 16, 1940.

Captain Ormand C. Julian

The Soldier's Medal was recently awarded to Capt. Ormand C. Julian, formerly of Chicago. According to the citation accompanying the award, Dr. Julian displayed heroism in participating in a "difficult and hazardous trek into the jungle to rescue a survivor of a plane crash" between Sept. 25 and Oct. 25, 1943. Dr. Julian graduated from the University of Chicago School of Medicine in 1937. He entered the service Sept. 1, 1942 and since Sept. 6, 1943 has been serving as a surgeon with the Medical Corps attached to the ATC in the China-Burma-India theater.

Captain Nicholas Lentini

Capt. Nicholas Lentini, formerly of Cheboygan, Mich., and now stationed in England, has been commended by his commanding general for saving the lives of a number of workmen trapped in a tunnel. At the risk of his own life he organized a party of men from his detachment and led them into the tunnel and administered treatment that revived the injured, saving their lives. His own commanding officer added his congratulations also on Dr. Lentini's leadership, ability and actions as reflecting great credit on his courage. Dr. Lentini graduated from the University of Michigan Medical School, Ann Arbor, in 1939 and entered the service in January 1943.

MISCELLANEOUS

MEDICAL JOURNALS MICROFILMED FOR CHINA

Eighty-four medical and nursing journals, microfilmed in their entirety on publication and air mailed to China, are the sole sources of modern medical practices and developments for the Emergency Medical Service Training School at Tung-an, in Hunan Province. The journals are microfilmed by the American Bureau for Medical Aid to China, a participating agency of United China Relief, which is supported by contributions through the National War Fund (46 Cedar Street, New York 5). Fourteen copies of each journal are made.

Specialized medical books for the use of doctors and nurses going to China from this country are also being microfilmed by the American Bureau for Medical Aid to China. Before the microfilming of these journals was undertaken, only those technics used by doctors in the first world war were taught at the training school at Tung-an. Thirty-four rolls of film were recently taken to China by Dr. C. K. Chu, director of the National Institute of Health. The films consisted of such diverse subjects as nutrition, the cultivation and use of the soybean, animal diseases and husbandry, child care and medical research.

SYMPOSIUM ON WAR MEDICINE

Harofe Haivri (the Hebrew Medical Journal) devotes its two volumes for the year 1943 to a symposium on war medicine. Some of the topics are "The Treatment of Gunshot Wounds of the Head and Brain During the Present War," by Dr. Leo M. Davidoff; "Newer Conceptions of the Treatment of Burns," by Dr. Jesse Bullowa and Dr. C. L. Fox Jr., and "Shock Syndrome and Its Treatment," by Dr. S. Standard. Bertha S. Schoolman, in an article on "Hadassah's Contribution to the War Effort," makes the statement that the Hadassah Medical Organization took steps to mobilize and coordinate the health facilities of Palestine on the outbreak of the war in September 1939. The Medical Center of Hadassah, we are told, is the crowning achievement of thirty years of health pioneering in Palestine. Today it assumes an important role in the medical plans of the armed forces in the Near East as well as in the civilian life of the country. Since 1939 Hadassah has cooperated with the medical military forces stationed in Palestine and the Near East. Of particular interest to them have been the special courses and clinical conferences on tropical and subtropical diseases, war surgery, typhus and malnutrition. Simultaneous with its function of rendering medical service to the civilian population and to the armed forces, the Rothschild-Hadassah University Hospital continues to make contributions also in the fields of teaching and research. An important field of activity through which Hadassah aids the War effort is the Malaria Control Service. The work is carried on under the direction of Prof. I. J. Kligler, director of the department of hygiene of the Hebrew University. According to him, twenty years of malaria control have rendered Palestine the only country in this part of the world in which this infectious disease is of minor significance as a factor in troop morbidity.

U. S. CADET NURSE CORPS

The U. S. Public Health Service, Division of Nurse Education, Washington, D. C., recently announced the appointment of Miss Ruth Sleeper as special consultant in the Division of Nurse Education. Miss Sleeper, on leave of absence from her position as assistant to the director of the Massachusetts General Hospital School of Nursing, Boston, will make a month's study of schools of nursing in South Carolina. She was invited to South Carolina to advise on plans for wartime expansion and the strengthening of educational plans for facilities to meet the urgent need for new student nurses. Schools throughout the state are helping to meet this need through participation in the U. S. Cadet Nurse Corps program, administered by the U. S. Public Health Service. Much of Miss Sleeper's time will be spent at the University of South Carolina at Columbia, assisting in developing proposed plans for a new school of nursing. As chairman of the Curriculum Committee of the National League of Nursing Education, Miss Sleeper is well qualified to advise in curricular planning.

SIGNING-ON EXAMINATIONS OF MERCHANT SEAMEN EXTENDED

In a recent announcement by the War Shipping Administration it was stated that the medical program calling for signing-on examinations of merchant seamen will have been extended to nineteen major United States ports by the end of June. Operation of the medical examination program is designed to discover acute surgical cases and communicable diseases and by prompt treatment to increase the efficiency of the Merchant Marine. The aim of the War Shipping Administration is to keep every man possible on the job. In such a military strategic industry, with an already limited manpower supply, medical officials of WSA consider it imperative that the services of every possible merchant seaman be fully utilized. Recently, out of 200 men found with chronic diseases, 50 were at sea within a week after a newly discovered medical treatment was made available for them. Others were physically fit for assignment to duty soon afterward. As chronic diseases are brought to light by the medical examinations, provisions are made for the treatment of the men in Marine hospitals. Should the signing-on examinations uncover more cases than can be cared for adequately in marine hospitals and other facilities of the United States Public Health Service, WSA said it would lend its support to plans now under consideration for providing additional hospital facilities for merchant seamen. Action is now pending that would provide new Marine hospitals in Florida and southern California.

Interest in the health of merchant seamen does not end with their signing-on examinations. Medical care aboard ship is being provided by WSA as rapidly as men can be trained in practical medicine. Men with a junior assistant purser-pharmacist's mate rating are being graduated from the U. S. Maritime Service Hospital Corps School at Sheepshead Bay, N. Y., at the rate of 50 a week. One out of every four merchant ships now carries a man with such a rating.

Presence of trained medical personnel aboard a merchant ship makes available to merchant seamen the latest in modern treatment, such as plasma, sulfonamide drugs and penicillin.

CASUALTIES OF U. S. ARMED FORCES SINCE OUTBREAK OF WAR

The Office of War Information reported on April 27 the number of casualties of the United States armed forces from the outbreak of the war, totaling 192,836. This total, combining the latest available War and Navy Department reports, includes 44,497 dead, 72,030 wounded, 41,923 missing and 34,386 prisoners of war. Of the prisoners of war, 1,904 have been reported by the enemy as having died in prison camps, mostly in Japanese occupied territory.

The War Department report (as of April 15) lists army casualties totaling 148,425. Of this number 25,582 were killed, 60,166 wounded, 32,727 missing and 29,950 prisoners of war. Of the wounded 33,077 have returned to active duty or have been released from the hospital. The casualties include 12,500 Philippine Scouts. Of these, 469 were killed and 747 wounded. The others are assumed to be prisoners of war.

The Navy Department (as of April 27, 1944) shows casualties whose next of kin have been notified totaling 44,411, made up of 18,915 dead, 11,864 wounded, 9,196 missing and 4,436 prisoners of war.

SCHOLARSHIPS FOR POST-GRADUATE STUDY

The Division of Nurse Education, U. S. Public Health Service, Washington, D. C., in a recent announcement states that scholarships for full time or part time postgraduate study are provided under the Bolton act for graduate nurses who qualify. These scholarships are designed to increase the number of graduate nurses prepared for critical nursing positions which require special preparation. They offer carefully selected graduate nurses splendid opportunities to prepare for key positions in fields where definite shortages now exist. Federal funds have been available under the Bolton act for five general types of scholarship programs: (1) well established postgraduate programs, (2) modified postgraduate programs, (3) part time courses, (4) postgraduate programs designed to prepare midwives, nurse anesthetists and expert clinical nurse practitioners, (5) supplemental clinical courses.

Scholarships cover tuition and fees for full time and part time students. Maintenance also is provided in some instances. State and local Procurement and Assignment committees have been advised to classify as essential nurses who are preparing for essential nursing education positions. To obtain a postgraduate scholarship, please follow this procedure: 1. Apply directly to the institution offering the program of courses you have selected. 2. Have your director of nurses follow up your application with a statement that she wishes you to have this special preparation. 3. If you plan to transfer to another critical position at the conclusion of your studies, request the director of that agency or institution to inform the college that the advanced program for which you are applying will better equip you for the new post.

An additional type of scholarship program consisting of workshops, institutes and short concentrated courses is now available in institutions which have presented an approved plan (THE JOURNAL, May 13, p. 155).

LIBERTY SHIP NAMED IN HONOR OF DR. JAMES D. TRASK

Dr. James D. Trask, formerly associate professor of pediatrics at the Yale University School of Medicine, New Haven, Conn., was posthumously honored recently when a Liberty ship was named in his honor and launched at the Bethlehem-Fairfield shipyards in Baltimore. The ship was christened by his widow. Dr. Trask died in Chicago May 24, 1942, while working for an army medical commission under an appointment as consultant to the Secretary of War and became internationally known for his work on infantile paralysis. Dr. Trask and Dr. John R. Paul of Yale University, his associate in the study of this disease, received the first grant made by the Committee on Virus Research of the National Foundation after it was organized in 1938. Dr. Trask graduated from Cornell University Medical College, New York, in 1917. He served in World War I from May 1918 to December 1919. At the meeting of the American College of Physicians in April 1942 he received jointly with Dr. Paul the John Phillips Memorial Medal.

ARMY-NAVY E AWARDED TO OPTICAL RESEARCH, INC.

Optical Research, Inc., Long Island City, N. Y., was recently awarded the Army-Navy E in recognition of the company's war production achievements. In 1941 Optical Research, Inc., initiated plans for large scale output of precision instruments to fit war needs. The company built its own time saving devices so successfully that during the first nine months of 1943 individual employee production was increased almost 1,000 per cent.

COMMUNITIES IN NEED OF PHYSICIANS

The following communities have applied to the U. S. Public Health Service for federal assistance in obtaining the services of physicians under the recently enacted law authorizing an appropriation of $200,000 for the relocation of physicians:

Pineville (Mecklenburg County), North Carolina.
Star (Montgomery County), North Carolina.
Waxhaw (Union County), North Carolina.
Glenrock (Converse County), Wyoming.
Leola (McPherson County), South Dakota.
Faith (Meade County), South Dakota.
Vale (Malheur County), Oregon.
McEwen (Humphreys County), Tennessee.
Tribune (Greeley County), Kansas.

Physicians interested in locating in these communities should communicate with the Surgeon General, United States Public Health Service, Washington (Bethesda Station), D. C.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 4519 has passed the House and Senate and has been signed by the President, appropriating $1,000,000 for use by the Administrator of Veterans' Affairs to provide seeing-eye or guide dogs for blind veterans who are entitled to disability compensation under laws administered by the Veterans' Administrator, and to pay all necessary traveling expenses to and from their homes and incurred in becoming adjusted to the seeing-eye dog. The appropriation may be used, too, to provide such veterans with mechanical electronic equipment for aiding them in overcoming the handicap of blindness. H. R. 4624 has passed the House, without amendment, a bill to consolidate and revise the laws relating to the Public Health Service. As passed by the House, the bill retains the provision that no regulation relating to qualifications for appointment of medical officers or employees shall give a preference to any school of medicine and the provision providing that for the duration of the present war and for six months thereafter graduates of reputable osteopathic colleges shall be eligible for appointment as reserve officers in the service.

Bills Introduced.—S. 1944, introduced by Senator Wagner, New York, and H. R. 4729, introduced by Representative O'Toole, New York, propose an appropriation of $500,000 annually for use by the Librarian of Congress in providing books published either in raised characters, or sound-reproduction records, or in any other form, for the use of the adult blind residents of the United States, including the territories and insular possessions. Of this appropriation, not exceeding $100,000, it is contemplated, will be expended for books in raised characters and not exceeding $400,000 for sound-reproduction records and for the maintenance and replacement of the government-owned reproducers for sound-reproduction records for the blind.

WOMAN'S AUXILIARY

Georgia

Atlanta was the first city in the country to establish a city-wide registry of blood types. Mrs. Edgar H. Greene conceived the idea in 1942 while president of the Woman's Auxiliary to the Fulton County Medical Society of having the organization take up the work. At present there are four laboratories in Atlanta, all staffed by auxiliary members who have been especially trained in the technic of blood typing. A registry will be started soon in Winston-Salem. Dr. Ben Hill Clifton spoke at a recent meeting of the Fulton County Medical Society.

Indiana

Mrs. A. B. Richter, Indianapolis, has sent a copy of Meredith Nicholson's fine article on Federalized Medicine to each of Indiana's senators and to the eleven congressmen. In part he says "The idea of socialized medicine impresses me only by its mischievousness. One of its worst features, apart from the blow to the individual's right to choose his own medical attendant, is the lessening of the doctor's incentive to carry on his studies beyond the point where he may be licensed to practice. . . . I consider the Murray-Wagner-Dingell legislation one of the worst measures proposed in recent congresses.

Michigan

Officers of the Michigan Auxiliary and the county presidents were invited by the Michigan Medical Society to attend a "School of Information" in Detroit recently. The school gave information about legislation and trends toward medical regimentation.

The Saginaw County Medical Auxiliary held a dinner meeting with the doctors. The auxiliary members sewed during January for the Children's Home.

New Jersey

The third state meeting of the New Jersey auxiliary executive board was held in Trenton recently.

The Camden County auxiliary met at the home of Mrs. H. W. Jack at Haddonfield. After the election of officers Mrs. Max Weiman reviewed "A Surgeon's World."

The Essex County auxiliary and the Contemporary Club of Newark held a joint Health Day meeting recently. Hudson County auxiliary is planning a card party, the funds of which will be given to war purposes. Middlesex County auxiliary held a meeting recently at the home of Mrs. M. S. Brody in Highland Park. After the meeting there was an exhibit of arts and hobbies of members. Dr. William Kvaraceus spoke on "Child Delinquency" at a recent meeting of the Passaic County auxiliary.

New York

At a recent meeting of the executive board of the New York auxiliary in New York City, about thirty women attended the dinner and business session. Interesting meetings were reported by eight county auxiliaries: Albany, Broome, Columbia, Fulton, Montgomery, Nassau, Rensselaer and Warren. At a recent meeting of the Rensselaer auxiliary Mrs. Rachael Newlin, superintendent of the Day Home, spoke on "The Effects of War on Children." The New York State annual convention will be held at the Hotel Pennsylvania in New York City, May 8-12.

Wisconsin

Members of the Milwaukee auxiliary were entertained by the Milwaukee Dental Auxiliary at a luncheon January 19. Professor Riordan of Marquette University spoke on "Forty Thousand Miles in Forty Minutes." Adjustable bed trays were donated to Pinehurst Sanatorium by the Rock County Medical Auxiliary, and proceeds from the annual holiday ball sponsored by the Marinette auxiliary were used at the Marinette Recreational Center.

OFFICIAL NOTES

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Departments of the United States Army and the United States Navy are on the air each Saturday (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

June 3. "Medicine in the Front Lines."
Speaker, Major Gen. George F. Lull, U. S. Army, Deputy Surgeon General, Washington, D. C.

June 10. "Frontiers of Medicine."
Speaker, Morris Fishbein, M.D., Editor of THE JOURNAL and of *Hygeia*.

June 17. "Mechanized Dandruff."
Speaker, Brig. Gen. Stanhope Bayne-Jones, Deputy Chief, Preventive Medicine Service, War Department, Washington, D. C.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

DISTRICT OF COLUMBIA

Death from Spotted Fever.—The death from Rocky Mountain spotted fever of Major Alexander Read Moir, chief of the Royal Air Force Transport Command group attached to the British Air Commission, occurred in Washington, May 16, according to the Washington *Post*. Major Moir, who died in Walter Reed General Hospital, was infected while removing ticks from his pet cocker spaniel in his home at Arlington, Va. He was said to be ill at home for several days before reporting to the hospital.

FLORIDA

Dr. Pearson Named Editor of State Journal.—Dr. Homer L. Pearson Jr., 416 Ingram Building, Miami 32, was appointed editor of the *Journal* of the Florida Medical Association at the annual meeting of the state medical association in St. Petersburg, April 14. He succeeds Dr. Shaler A. Richardson, Jacksonville. Stewart G. Thompson, D.P.H., Jacksonville, will continue as business manager of the journal.

Personal.—Dr. Walter C. Jones Jr., Miami, has been named a member of the merit system council of the Florida State Board of Health and Crippled Children's Commission for a three year term.——Dr. Hart E. Van Riper has been named medical director of James M. Jackson Memorial Hospital, Miami, succeeding Dr. Charles L. Clay.——Dr. Herbert W. Virgin Jr., Miami, who has been inactive for about two years on account of illness, has resumed the practice of medicine.——Dr. Joseph B. Kollar, Vero Beach, has been named a member of the state board of medical examiners to succeed Dr. James E. Crump, Winter Haven, whose term expired.

ILLINOIS

State Heart Association Incorporated.—The Illinois Heart Association has been granted a charter under the "general not for profit corporation act" of Illinois. The association was organized "to stimulate interest and encourage investigation in the social, medical, industrial and economic problems connected with heart disease, to develop cardiac clinics and other facilities for the diagnosis and treatment of heart disease and to correlate and standardize the work of various agencies interested in the prevention and relief of heart disease throughout the state of Illinois, and sponsor local societies." At its first meeting in Chicago, May 16, Dr. Harry A. Durkin, Peoria, was chosen president and Dr. Frank Deneen, Blomington, vice president. Drs. Don C. Sutton, Chicago, and Luther J. Osgood, Waukegan, are secretary and treasurer, respectively. Mrs. Ruth Pearce McEldowney, executive secretary of the Chicago Heart Association, will serve the new group in a similar capacity. For the present the office of the local society at 203 North Wabash Avenue, Chicago 1, will be used for the headquarters of the newly formed state group. The latter supplants an old state society which had been inactive for a number of years.

Chicago

Scientists Oppose Ordinance Repeal at City Pound—That the repeal, April 12, of a section of the municipal code providing for the disposition of unclaimed impounded dogs will prove to be a public health hazard is evidenced in a report recently issued to the press by a group of scientists including members of the faculties at medical schools in Chicago. Indicating that the housing of dogs at the pound is overcrowded, the report emphasizes that the housing of unclaimed impounded dogs under such conditions for a five day period instead of the heretofore authorized three to one day period will prove a public health hazard. The present facilities at the shelter are inadequate to house the number of dogs now picked up if all the animals are now held five days before being disposed of. Licensed or otherwise desirable dogs have always been kept for a minimum of five days and frequently longer. The three day interval for the other animals will keep the number of dogs impounded up to the 1943 level and prevent overcrowding in the shelter. In 1943 15,463, in addition to 250 other animals, were removed from the streets by the staff of the municipal animal shelter under the jurisdiction of the department of police. About one third of the impounded dogs, or 4,451, attacked and bit a corresponding number of persons. In addition 5,869 citizens were bitten by dogs not apprehended bv the police. Of these citizens 1,284 were supplied with antirabic treatment consisting of fourteen to twenty-one injections by the board of health alone. This number comprised those bitten by dogs unavailable for examination and observation or dogs known or suspected to be rabid. Ninety-four Chicago dogs out of 460 examined by the laboratories of the board of health were found to have rabies. One human being died from rabies in 1943, 1 in 1939 and 6 in 1936. Under city ordinance unclaimed impounded dogs may be distributed to the institutions of medical education and research in Chicago. About three fourths of the dogs received from the shelter are used for instruction and research. In an appeal to rescind the recent action of the council, the report points out that the former treatment of unclaimed impounded dogs is the only solution of the problem until the facilities of the shelter can be enlarged and is necessary for the preservation of the health and safety of citizens as well as for the proper education of medical and dental officers and civilian physicians and dentists.

IOWA

Dr. Carter Dies.—Charles H. Carter, D.Sc., professor of bacteriology, Parsons College, Fairfield, chairman of the Iowa Board of Examiners in the Basic Sciences, died suddenly, May 3. Dr. Carter was also secretary-treasurer of the American Association of Basic Science Boards, which was organized last February. He had been a member of the state basic science board since its organization six years ago.

KENTUCKY

Changes in Health Officers.—Dr. Henry Van D. Stewart, formerly of Little Rock, Ark., was recently appointed in charge of the Perry County Department of Health and will be located in Hazard.——Dr. Paul A. Wright, Jackson, has been named health officer of Fulton County, succeeding Dr. Jesse M. Dishman, who was recently transferred to Benton.

LOUISIANA

State Medical Election.—Dr. Rhett G. McMahon, Baton Rouge, was named president-elect of the Louisiana State Medical Society during its recent annual meeting in New Orleans and Dr. Valentine H. Fuchs, New Orleans, was installed as president. Other officers include Drs. Daniel J. Murphy, New Orleans, Jason P. Sanders, Shreveport, and Phillip H. Jones Jr., New Orleans, vice presidents. Dr. Paul T. Talbot, New Orleans, is secretary.

MAINE

State Medical Meeting.—The ninety-first annual session of the Maine Medical Association will be held at the Samoset Hotel, Rockland, June 25-27, under the presidency of Dr. Oscar F. Larson, Machias. Among the speakers will be:

Dr. Malcolm T. MacEachern, Chicago, Postwar Problems—Providing Adequate Opportunities for Graduate Medical Education.
Dr. Joseph C. Doane, Philadelphia, Intravascular Thrombosis and Embolism.
Dr. Joseph E. Porter, Portland, The Significance of the Rh Factor in Blood.
Dr. Paul Dudley White, Boston, Some Observations on the Treatment of Heart Disease.
Surgeon General Thomas Parran of the U. S. Public Health Service (subject not announced).
Capt. David W. Lyon Jr. (MC), Recent Developments in the Treatment of War Casualties.
Dr. Adam P. Leighton, Portland, A Medical Metamorphosis.

Guest speakers at dinner sessions will include Dr. Frank H. Lahey, Boston, on "The Management of the Surgical Lesions of the Terminal Ileum, Colon and Rectum," and Dr. Morris Fishbein, Editor of THE JOURNAL, on "Changes in Medical Practice and the Wagner-Murray-Dingell Bill."

MASSACHUSETTS

Personal.—Dr. Ferdinand Haase Jr. has been named assistant director of the Massachusetts General Hospital, Boston, effective April 1.——Dr. Ira W. Richardson, Wakefield, has been appointed medical examiner of the Third Middlesex District, succeeding the late Dr. Roscoe D. Perley, Melrose.

Community Council Created to Expand Facilities.—The Greater Boston Community Council was recently organized to establish planning for social work and health service on a metropolitan basis. It will include the Boston Council of Social Agencies, which includes the Boston Health League and the United Settlements of Greater Boston, the Hospital

Council of Boston and the Greater Boston Nursing Council for War Service. The absorption of these units into one council will serve to unify the activities of all member agencies.

MICHIGAN

Condemnation Proceedings for Medical Center Site.—The board of education has approved the recommendation that condemnation proceedings begin for the area to house the first unit of the Wayne University Medical Science Center, Detroit, including the two blocks lying between Farnsworth and Theodore streets and running from Beaubien to Hastings as well as a third block bounded by Frederick, St. Antoine, Farnsworth and Beaubien streets. The three blocks are to be used for a site for the Wayne University-County Hospital. It was agreed that the action "be based on the understanding that none of the buildings in the condemned area will be demolished or tenants moved from them until the war is ended or until such time as the housing situation is relieved." The entire district bounded by Warren, Brush, Hastings and Ferry streets, with a gross area of 53 acres, was previously earmarked for the development of the center.

MISSISSIPPI

Personal.—Dr. James P. Ward, Greenville, director of the Washington County Health Department, has resigned to accept a position with the Standard Oil Company as physician on the Island of Aruba, a Dutch colony, 20 miles off the coast of Venezuela, it is reported.——Dr. Hosea F. Magee has been named superintendent in charge of the Mississippi State Charity Hospital, Jackson.——Dr. Charles B. Mitchell has been appointed superintendent of the Mississippi State Hospital at Whitfield.

State Medical Election.—Dr. James K. Avent, Grenada, was chosen president-elect of the Mississippi State Medical Association during its annual meeting in Jackson, May 10, and Dr. Benjamin L. Crawford, Tylertown, was inducted into the presidency. Other officers include Drs. Thomas M. Dye, Clarksdale, secretary, and John F. Lucas, Greenwood, treasurer. A resolution was adopted at the meeting favoring the establishment of a four year school of medicine in the state. The organization of a "half-century club," composed of physicians of the state who have completed fifty years or more in the practice of medicine, was effected during the session. Newspapers reported that about sixty physicians are eligible for membership in the group.

NEW HAMPSHIRE

State Medical Election.—Dr. Fred Fernald, Nottingham, was elected president of the New Hampshire Medical Society at its annual meeting in Manchester, May 16. Dr. John F. Gile, Hanover, was named vice president and Dr. Carleton R. Metcalf, Concord, was reelected secretary-treasurer.

NEW YORK

Physician Wills Body to Hospital.—Dr. Ethel L. Leonard, resident physician in charge of the anesthesia at the Staten Island Hospital, Staten Island, who was fatally injured when struck by a bus April 11, requested in her will that her body be given to the New York Polyclinic Medical School and Hospital for medical research. Newspapers report that the offer was rejected.

Personal.—Dr. Otto Pfaff was honored recently by the Madison County Medical Society and its woman's auxiliary on the occasion of his eighty-first birthday. Dr. Pfaff has practiced medicine for fifty-six years, fifty-four of which have been spent in Oneida.——John R. Murlin, Ph.D., professor of physiology and director of the department of vital economics, University of Rochester, was given a dinner, April 29, in recognition of his seventieth birthday.

Mental Hygiene Promotions.—Recent changes in the state department of mental hygiene include the promotion of Dr. Newton J. T. Bigelow, Brentwood, assistant commissioner, as deputy commissioner; Dr. Arthur W. Pense, Wassaic, acting medical inspector, as assistant commissioner; Dr. Joseph L. Camp, Thiells, assistant director at Letchworth Village, as acting medical inspector; Paul O. Komora, Albany, assistant secretary, as administrative secretary, and Benjamin Malzberg, Ph.D., Albany, assistant director of statistics, as director of the bureau of statistics. Dr. Alfred M. Stanley, Orangeburg, acting medical inspector, was named director of the Harlem Valley State Hospital, Wingdale. Dr. Milton M. Grover, assistant director of the Hudson River State Hospital, Poughkeepsie, has been named acting medical inspector of the department. Dr. John R. Ross has been reinstated as director of the Hudson River State Hospital, a position he left in August 1943 to serve as superintendent of the State Hospital for Mental Diseases, Howard, R. I. On April 11 Governor Thomas E. Dewey signed eleven mental hygiene bills, representing in part the program developed by the Moreland Commission, which made a survey of the state's institutions (THE JOURNAL, June 12, 1943, p. 456). According to the New York *Herald Tribune* the measures deal with boards of visitors, accounts and records of hospitals, licenses of examiners and psychologists and records of patients.

New York City

Hospital Service Includes Care for Ward Patients.—On May 12 the Associated Hospital Service of New York started the sale of group contracts providing care in hospital wards at a cost of 56 cents a month for individuals and $1.32 for an entire family, newspapers reported. The new plan, which will be sold only on a pay roll deduction basis, is designed for persons with low income who cannot afford the service's regular Blue Cross Plan, providing hospital care in semiprivate rooms. It was stated that the new contract will reach a substantial number of persons who are normally forced to accept hospital care in wards on a charity basis.

Physician Presents Collection to Public Library.—Dr. Albert A. Berg recently gave two rare volumes and manuscripts to the New York Public Library to be added to the collection of great works of English literature which he had already given to the library in memory of his brother, Dr. Henry W. Berg, who died in 1938. According to the New York *Times* the two volumes just given to the library were issued in 1480 by William Caxton, England's first printer. The manuscripts are by Samuel Taylor Coleridge, some of them unpublished notebooks. The *Times* stated that these will be of great value in biographic and literary studies.

Memorial to Dr. Ewing.—A fund of $150,000 will be subscribed to Memorial Hospital for the Treatment of Cancer and Allied Diseases as a memorial to the late Dr. James Ewing, identified with the hospital for many years. Income from the fund will be used to support undergraduate and graduate instruction for medical students at Cornell University Medical College and at the hospital, to finance at least two lectures annually on recent advances in neoplastic diseases and to support such special study as may seem advisable to a supervisory committee. Dr. Elise D. S. L'Esperance, member of the board of managers and director of the Strang Prevention Clinic, is chairman of the fund committee.

OKLAHOMA

State Medical Election.—Dr. Victor C. Tisdal, Elk City, was chosen president-elect of the Oklahoma State Medical Association during its annual meeting in Tulsa, April 24-26, and Dr. Charles R. Rountree, Oklahoma City, was inducted into the presidency. Dr. Frank W. Boadway, Ardmore, was named vice president. Dr. Lewis J. Moorman, Oklahoma City, is secretary. The 1945 session will be held in Oklahoma City. A resolution was adopted at the meeting authorizing the committee on public policy to work toward the presentation of a law creating a state board of health for the state of Oklahoma. Under the present setup the state commissioner of health is appointed by the governor. The proposed resolution would create a board of health of from five to nine members who would be responsible for the appointment of the state health officer and the administrative policies of the state health department. The constitution of the state provides for this type of board, but the legislation affirming it has never been created.

PENNSYLVANIA

Program to Reduce Impaired Hearing.—A plan has been launched in Pennsylvania to obtain aid for the deaf which, if successful, will be used as a basis for similar plans in other states. Diagnostic clinics are being organized, especially for the rural communities, where special study and advice can be given for difficult or obscure cases. All cases of impaired hearing will be referred to the family physician or otologist. In Philadelphia, special regional clinics will be established in certain Philadelphia hospitals for those who cannot afford the services of private physicians. The program stemmed from the creation of a subcommittee from Pennsylvania by the committee for the conservation of hearing of the American Academy of Ophthalmology and Otolaryngology. According to *Philadelphia Medicine*, the committee, which is composed of Dr. James A. Babbitt, Philadelphia, Dr. Walter

Hughson, Abington, Dr. George M. Coates, Philadelphia, and Harold Westlake, Ph.D., State College, was instructed to prepare and put in operation a statewide plan for aid to the deaf.

Philadelphia

The Da Costa Oration.—Capt. Lewis Kraeer Ferguson (MC) delivered the Da Costa Oration of the Philadelphia County Medical Society, May 24, on "Surgical Experiences in Battle Casualties."

Phi Lambda Kappa Honor Lecture.—Dr. Philip Levine, Newark, N. J., will deliver the annual Phi Lambda Kappa Honor Lecture at the Hospital of the University of Pennsylvania, June 16, on "The Clinical Importance of the Rh Factor."

Dr. Arnow Named Director of Research at Sharp & Dohme.—Dr. Leslie Earle Arnow, for two years director of the department of biochemistry of the medical and research laboratories of Sharp & Dohme, has been appointed director of research to succeed Dr. Arnold D. Welch, who resigned to become professor of pharmacology at Western Reserve University School of Medicine, Cleveland (THE JOURNAL, May 13, p. 16). Dr. Arnow received his degree in pharmacy at the University of Florida in 1930, his doctor of philosophy degree at the University of Minnesota in 1934 and his doctor of medicine degree at the University of Minnesota Medical School, Minneapolis, in 1940.

Pittsburgh

Memorial Lectures.—The Pittsburgh Academy of Medicine sponsored memorial lectures for the late Drs. Charles H. and Karl A. Emmerling and Robert W. Stewart at a meeting, May 16. Dr. Robert E. Gross, Boston, gave the combined memorial lectures on "Surgical Treatment of Patent Ductus Arteriosus."

Society News.—On May 9 the Allegheny County Medical Society held its annual meeting at the Hotel William Penn. The speakers were Dr. William McKee German, Cincinnati, on "Tropical Diseases: Distribution, Transmission and Prevalence" and Dr. William H. Kneedler, Philadelphia, "Some Aspects of Malaria." Dr. Walter H. Judd, U. S. Congressman from Minnesota, addressed the banquet on "Medicine in Politics."

New Fellowship in Industrial Medicine.—The James S. Kemper Foundation has given $2,500 to the department of industrial hygiene, University of Pittsburgh School of Medicine, to establish a fellowship in industrial medicine. The purpose of the fellowship is to make available to a qualified physician the opportunity to pursue graduate work in preparation for a career in industrial medicine. Additional information may be obtained from Dr. William S. McEllroy, dean of the university.

RHODE ISLAND

Training School for Cancer.—Rhode Island's first training school for cancer was held at the Rhode Island Hospital, Providence, recently, attended by 150 women. Among the speakers was Clarence C. Little, Sc.D., managing director of the American Society for the Control of Cancer. The training schools are part of an activity of the Women's Field Army of the American Society for the Control of Cancer.

Perpetuate Memory of Charles Chapin.—The Providence City Council recently adopted an ordinance to create a standing committee to cooperate with the Rhode Island Medical Society in perpetuating the memory of Dr. Charles V. Chapin, superintendent of health in Providence for forty-eight years. Dr. Chapin died in 1941. According to the *Rhode Island Medical Journal* Dr. Chapin established the first municipal laboratory in the country. He is credited with the first experiments in filtering water by mechanical filtration and for making Providence the first city to discontinue fumigation as a form of terminal disinfection in the prophylaxis of contagious disease. The state medical society named its annual oration in his honor.

WEST VIRGINIA

State Medical Election.—Dr. Thomas L. Harris, Parkersburg, was elected president of the West Virginia State Medical Association at its May meeting in Wheeling and will take office January 1. Dr. Robert J. Reed Jr., Wheeling, is currently president. Other officers chosen at the recent meeting, who will also take office January 1, include Drs. Mayes B. Williams, Wheeling, and Lynwood G. Houser, Beckley, vice presidents. Mr. Charles Lively, Charleston, is executive secretary of the association. Clarksburg was chosen as the place for the 1945 meeting, the time to be decided later. Included among the recommendations approved at the session was one favoring the establishment of a national department of health with an administrative officer holding the degree of doctor of medicine and occupying a seat in the President's cabinet. Another recommendation favored the enactment of legislation providing for the appointment and tenure of office of the state health commissioner subject to the approval of the council of the state medical association, for the medical personnel of the Public Health Council to be chosen from a panel recommended by the council, and for the appointment of medical superintendents of all state eleemosynary institutions to be subject to the approval of the Public Health Council and the council of the state medical association. Another recommendation urged the merger of all city health departments with the health department of the county in which the unit is located. The program to conserve hearing among school children, initiated by the American Academy of Ophthalmology and Otolaryngology, was endorsed at the meeting. The house of delegates authorized any component society to appoint a committee to take over at the end of the war, with the approval of the government, the emergency medical defense equipment of the Office of Civilian Defense now located in various areas in West Virginia.

WISCONSIN

Memorial to Dr. Gramling.—The Medical Society of Milwaukee County has created the Anthony J. Gramling Memorial essay contest in honor of the late Captain Gramling, who was killed in action in Italy, January 10. The award will take the form of a first prize of $100 and a gold medal and a second prize of $50 and a silver medal, to be presented to the winners of an annual contest to be inaugurated at the end of the war.

GENERAL

National Gastroenterological Association.—The ninth annual convention of the National Gastroenterological Association will be held at the Hotel Astor, New York, June 7, under the presidency of Dr. Anthony Bassler, New York. Among the speakers will be:

Dr. Benjamin Jablons, New York, Gastric Symptoms in Hypertension and Renal Disease.
Major Arthur A. Kirchner, M. C., Gastrointestinal Disturbances in the Soldier.
Dr. Sandor Lorand, New York, Emotional Factors and Spastic Colitis.
Dr. Isidore Snapper, New York, Postwar Malaria Problems.
Drs. Linn J. Boyd and David Schwimmer, New York, Liver Function Tests: A Study in 600 Cases.

Federation for Clinical Research.—The second annual meeting of the American Federation for Clinical Research will be held at the Stevens Hotel, Chicago, June 12, under the presidency of Dr. J. Allen Kennedy, Nashville, Tenn. Included among the speakers will be:

Dr. Robert H. Williams, Boston, The Pharmacology of Thiouracil.
Dr. Abraham O. Wilensky, New York, Chemotherapy in the Treatment of Acute Hematogenous Osteomyelitis.
Drs. Richard S. Gubner and Murrill M. Szucs, Brooklyn, Provocative Prolongation of the PR Interval in Rheumatic Fever.
Drs. Conrad R. Lam and Roy D. McClure, Detroit, Penicillin as an Adjunct in Skin Grafting of Severe Burns.
Drs. J. Warrick Thomas and Vernon C. Wiksten, Cleveland, Allergy in Relation to the Genitourinary Tract.

Directory of Medical Specialists.—The third edition of the Directory of Medical Specialists listing names and biographic data of all men certified by the fifteen American boards is to be published early in 1945. Collection of biographic data of the diplomates certified since the 1942 edition and revision of the older listings are now going forward rapidly. Diplomates are requested to make prompt return of notices regarding their biographies as soon as possible after receiving the proper forms from the publication office soon to be mailed to them. The directory is published under the direction of the Advisory Board for Medical Specialties by the A. N. Marquis Company, 919 North Michigan Avenue, Chicago 11. Dr. Paul Titus, 1015 Highland Building, Pittsburgh 6, is the directing editor.

Meeting of Allergists.—The first annual meeting of the American College of Allergists will be held at the Palmer House, Chicago, June 10-11, under the presidency of Dr. French K. Hansel, St. Louis. Among the speakers will be:

Dr. Charles F. Code, Rochester, Minn., Physiologic Aspects of Allergy.
Jacques J. Bronfenbrenner, Ph.D., St. Louis, The Mechanism of Desensitization.
Dr. Mary E. H. Loveless, New York, Immunologic Studies of Hay Fever.
Elvin C. Stakman, Ph.D., St. Paul, Minn., The Aerobiologic Phase of Allergy.

Dr. Sanford B. Hooker, Boston, the guest of honor, will discuss "Qualitative Differences in Canine Dander." One feature of the meeting will be a symposium on service allergy. On Friday June 9 an organization meeting of a section of veterinary allergists will be held.

Society for Investigative Dermatology.—The sixth annual meeting of the Society for Investigative Dermatology will be held at the Stevens Hotel, Chicago, June 13, under the presidency of Dr. Frederick D. Weidman, Philadelphia, who will discuss "The Past, Present and Future in Investigative Dermatology in the United States." Among the speakers on the program will be:

Edmund V. Cowdry, Ph.D., St. Louis, An Integrative Study of Epiderma Methylcholanthrene Carcinogenesis.
Lieut. Eugene S. Bereston, M. C., The Effects of Central Nervous System Lesions on Cutaneous Reactions.
Drs. Naomi M. Kanof and Adolph Rostenberg Jr., Washington, D. C., A Study of the Chemical Specificity of the Eczematous Sensitization.
Dr. Ernest A. Strakosch, Chicago, Clinical and Laboratory Investigation of 350 Cases of Chancroid.
Dr. Robert E. Stowell, St. Louis, Photometric Histochemical Determination of Substances in the Skin; Measurements of Thymonucleic Acid.

Society News.—The American College of Radiology will hold a councilors luncheon June 13 at the Stevens Hotel, Chicago, the annual meeting to be held June 14, and the annual banquet closing the session that evening.——The annual meeting of the American Medical Women's Association will be held June 10-11 at the Blackstone Hotel, Chicago, under the presidency of Dr. Zue A. Johnston, Pittsburgh. Dr. Alice Stone Woolley, Poughkeepsie, N. Y., president-elect of the association, as the principal speaker, will discuss "A Rendezvous with the Future." A feature of the meeting will be a tea Sunday afternoon in honor of Dr. Esther C. P. Lovejoy, New York, in recognition of her twenty-five years' service as chairman of the American Women's Hospital Committee, a section of the American Medical Women's Association. General headquarters during June 12-16 will be room 18, fourth floor, Stevens Hotel.

Broncho-Esophagological Association Meeting.—The twenty-sixth annual meeting of the American Broncho-Esophagological Association will be held at the Waldorf-Astoria Hotel, New York, June 6, under the presidency of Dr. Robert L. Moorhead, Brooklyn. Among the speakers will be:

Drs. Gabriel Tucker and Joseph P. Atkins, Philadelphia, Recent Trends in the Bronchologic Use of Chemotherapeutic and Biotherapeutic Agents.
Drs. Herman J. Moersch and Stuart W. Harrington, Rochester, Minn., Benign Tumor of the Esophagus: Report of 11 Cases.
Dr. Louis H. Clerf, Philadelphia, Osteoma of Trachea.
Dr. Frederick T. Hill, Waterville, Me., Adenoma of the Bronchus, Treated by Coagulation.
Drs. Paul H. Holinger, Chicago, H. James Hara, Hinsdale, Ill., and Edwin F. Hirsch, Chicago, Bronchogenic Carcinoma: An Analysis of 175 Proved Cases.
Drs. Chevalier L. Jackson and Charles M. Morris, Philadelphia, Anatomy of the Bronchial Tree and Lungs, with a Simple Nomenclature.

American Diabetes Association.—The fourth annual meeting of the American Diabetes Association will be held at the Hotel Sherman, Chicago, June 11, under the presidency of Dr. Joseph T. Beardwood Jr., Philadelphia. Among the speakers will be:

Dr. Franklin B. Peck, Indianapolis, The Newer Insulin Mixtures—A Follow-Up Study.
Dr. Martin G. Goldner, Chicago, Alloxan Diabetes.
Major Samuel S. Altshuler, M. C., Diabetics Serving in the Armed Forces.
Dr. Elmer L. Sevringhaus, Madison, Wis., Glucose Tolerance Tests in the Diagnosis of Diabetes and Hyperinsulinism.
Dr. F. M. Simmons Patterson, Abington, Pa., Refrigeration in Diabetic Surgery.
Dr. Joseph H. Barach, Pittsburgh, The Importance of Nutrition in the Care of the Diabetic Child.

Col. Leonard G. Rowntree, M. C., will deliver the Banting Memorial Lecture on "Experiences of the Selective Service System with Glycosuria." Dr. Beardwood will deliver his presidential address at the annual banquet, and Dr. Frederick W. W. Hipwell, Toronto, Canada, will discuss "Personal Reminiscences of Frederick G. Banting."

Meeting of Otologists.—The seventy-seventh annual meeting of the American Otological Society will be held at the Waldorf-Astoria Hotel, New York, June 5-6, under the presidency of Dr. Wesley C. Bowers, New York. Among the speakers will be:

Dr. Karl O. Lowy, Rochester, N. Y., Functional Studies on Labyrinth Fenestration in Animals.
Lieut. Col. Joseph L. Goldman, M. C., A Comparative Study of Whispered Voice Tests and Audiograms.
Lieut. Col. Paul A. Campbell, M. C., The Development of Aviation Otology During World War II.
Willis C. Beasley, Ph.D., Bethesda, Md., The Future of Physical Therapy for the Deafened.
Dr. Pierre P. Viole, Los Angeles, Experiences in Surgery of the Facial Nerve.

One feature of the program will be a discussion on the rehabilitation of the war deafened with Dr. Gordon Berry, Worcester, Mass., discussing "Vocational Rehabilitation Service"; Capt. Harry P. Schenck (MC), "The Navy"; Lieut. Col. Marion R. Mobley, M. C., "The Army," and Dr. Dean M. Lierle, Iowa City, "The Civilian Otologist."

Association for the Study of Internal Secretions.—The twenty-seventh annual meeting of the Association for the Study of Internal Secretions will be held at the Stevens Hotel, Chicago, June 12-13, under the presidency of Dr. E. Kost Shelton, Los Angeles. Among the speakers will be:

Dr. Albert Segaloff, Detroit, The Role of the Liver in the Metabolism of Synthetic Estrogens and Proestrogens.
Dr. Henry S. Guterman, Chicago, A Colorimetric Urine Test for Human Pregnancy.
Dr. Maurice Fremont-Smith, Boston, The Vaginal Smear in the Diagnosis of Cancer of the Uterus.
Dr. Willard M. Allen, Ellenmae Viergiver and Dr. Samuel D. Soule, St. Louis, The Excretion of Sodium Pregnandiol Glucuronidate in the Urine Following the Oral Administration of Anhydrohydroxyprogesterone and Progesterone to Patients with Secondary Amenorrhea.
Drs. M. Edward Davis, Chicago, and Arthur A. Hellbaum, Oklahoma City, Observations on the Experimental Use of Gonadotropic Extracts in the Human Female.
Drs. Willard O. Thompson and Phebe K. C. Thompson, Chicago, The Role of the Pituitary in Toxic Goiter.
Oscar Riddle, Ph.D., and Vita M. Rauch, Cold Spring Harbor, N. Y., Action of Estrogen on Plasma Calcium and Endosteal Bone Formation in Parathyroidectomized Pigeons.

A feature of the meeting will be a symposium on thiouracil.

American Proctologic Society.—The annual meeting of the American Proctologic Society will be held at the Stevens Hotel in Chicago, June 12, under the presidency of Dr. Homer I. Silvers, Atlantic City, N. J. Among the speakers on the tentative program are:

Dr. Richard I. Brashear, Columbus, Ohio, Malignancy of the Colon and Rectum.
Dr. Hugh Beaton, Fort Worth, Texas, Benign Disease of the Colon and Rectum.
Drs. Harry E. Bacon, William D. Todhunter, and Orville C. Gass, Philadelphia, The Present Status of the Surgical Treatment of Carcinoma of the Rectum and Sigmoid.
Dr. Frank H. Lahey, Boston, Lesions of the Terminal Ileum, Colon and Rectum.
Dr. Percy A. Brooke, Worcester, Mass., Gastrointestinal Bleeding on a Psychic or Emotional Basis Following Minor Surgical Procedures.
Dr. Marion C. Pruitt, Atlanta, Ga., The Problems Concerned in Decreasing Pain in Anorectal Surgery, with Special Reference to Prolonged Anesthesia with Alcohol.
Dr. Edward G. Martin, Detroit, Modern Adaptation of the "Sliding Skin Flap" to Pilonidal Cyst, Anal Stricture and Reconstruction of Anal Lining.
Dr. Victor K. Allen, Tulsa, Okla., The Intersphincteric Hernioplasty of the Prolapsed Rectum.
Dr. Harry W. Christianson, Minneapolis, Prolapsing Tumors of the Rectum and Sigmoid.

American Gynecological Society.—The sixty-eighth annual session of the American Gynecological Society will be held at the Hotel Hershey, Hershey, Pa., June 19-21, under the presidency of Dr. George W. Kosmak, New York. Among the speakers will be:

Dr. Leroy A. Calkins, Kansas City, Mo., The Second Stage of Labor —The Descent Phase.
Dr. Edward C. Hughes, Syracuse, N. Y., The Relationship of Glycogen to Problems of Sterility and Ovular Life.
Dr. Roy E. Nicodemus, Danville, Pa., An Analysis of Sterility Studies in the Female.
Dr. Carl P. Huber, Indianapolis, The Failure of the Conservative Treatment of Eclampsia.
Dr. Rupert E. Arnell, New Orleans, Management of Eclampsia: Conclusions Based on 142 Consecutive Cases in a Five Year Period Without Maternal Death.
Dr. Robert L. Faulkner, Cleveland, An Injection Study of the Uterine Blood Vessels.
Dr. Richard W. TeLinde, Baltimore, The Minimum Histological Changes in Cervical Biopsies to Justify the Diagnosis of Malignancy.
Dr. Gerald W. Gustafson, Indianapolis, Management of Abruptio Placentae.
Dr. Nicholson J. Eastman, Baltimore, Sodium Pentothal Anesthesia in Obstetrics: An Analysis of 1,500 Cases.

The Joseph Brettauer Memorial Lecture will be delivered by Dr. Louis Carnac Rivett, London, England, on "Hydramnios."

Society of Clinical Pathologists.—The twenty-third annual meeting and eleventh seminar of the American Society of Clinical Pathologists will be held at the Drake Hotel, Chicago, June 8-11, under the presidency of Dr. Walter S. Thomas, Rochester, N. Y., who will discuss "Avocatus Diaboli." Among the speakers will be:

William H. Taliaferro, Ph.D., Chicago, Immunity in Malaria.
Dr. Harry J. Corper and Maurice L. Cohn, Ph.D., Denver, The Biologic Diagnosis of Tuberculosis: Quantitative Animal Evaluation Tests on the Syrian Hamster and the Guinea Pig.
Drs. Charles Weiss and Frank H. Roblin and Marian C. Sherky, A.B., San Francisco, Bacteriologic Findings in Infections of the Eye in the San Francisco Bay Region.
Drs. Sidney C. Madden and George H. Whipple, Rochester, Plasma Proteins and Amino Acids in Disease Therapy.

There will be a demonstration by Dr. Edith L. Potter, Chicago, on "Autopsy Technic on the Newborn" and a round table discussion on "Medical Economics as Related to the Practice of Pathology in the Hospital." At the annual banquet, June 10, Rev. Alphonse M. Schwitalla, S.J., St. Louis, will discuss "The Clinical Pathologist in the Hospital." On Sunday June 11 there will be a seminar on "Pathology of Tropical Diseases" conducted by Col. James E. Ash, curator, Army Medical Museum, Washington, D. C., at which Dr. Israel Davidsohn, Chicago, will be the moderator.

American Therapeutic Society.—The forty-fifth annual meeting of the American Therapeutic Society will be held at the Stevens Hotel, Chicago, June 10, under the presidency of Dr. William V. Watson, Toronto. Included among the speakers will be:

Dr. George L. Waldbott, Detroit, Hay Fever Treatment During the Season.
Dr. H. Arnold H. McNitt, Washington, D. C., Hypertensive Encephalopathy—A Clinical Consideration.
Dr. Reginald A. Higgons, Port Chester, N. Y., Effect of Ultraviolet Air Sterilization on Incidence of Respiratory Infections in a Children's Institution.
Dr. Charles Roberts Thomas, Chattanooga, Tenn., Complication of Rabies Vaccine, with Suggestions as to Treatment.
Dr. Harry E. Ungerleider, New York, Vitamin K Therapy in Menorrhagia.
Major Daniel J. Preston, M. C., Battle Casualties in an Army General Hospital.
Dr. Italo F. Volini, Chicago, The Clinical Use of Sulfamerazine.
Dr. Horton Corwin Hinshaw and William H. Feldman, D.V.M., Rochester, Minn., The Use of Sulfone Drugs in the Treatment of Experimental and Clinical Tuberculosis.
Lieut. Col. Earl R. Denny, M. C., Some Clinical Observations on the Use of Penicillin.
Dr. Willard van Hazel, Chicago, Surgical Treatment of Bronchiectasis.

Capt. Alphonse McMahon (MC) will be the guest speaker at the annual banquet.

Meeting of Ear, Nose and Throat Specialists.—The forty-ninth annual meeting of the American Laryngological, Rhinological and Otological Society will be held at the Waldorf-Astoria, New York, June 9-10, under the presidency of Dr. H. Marshall Taylor, Jacksonville, Fla. Among the speakers will be:

Dr. Forrest J. Pinkerton, Honolulu, Hawaii, Experiences in a War Zone Since the "Blitz."
Dr. William J. McNally, Montreal, Quebec, Canada, The Otoliths and the Part They Play in Man.
Dr. Ben R. Dysart, Pasadena, Calif., Diabetic Gangrene Involving the Sinuses.
Dr. Albert C. Furstenberg, Ann Arbor, Mich., Disturbances of the Functions of the Salivary Glands.
Dr. George E. Shambaugh Jr., Chicago, The Comparison of the Hearing Improvement Following the Fenestration Operation and the Hearing Improvement Obtained with a Hearing Aid.
Dr. Edmund Prince Fowler, New York, The Aging Ear.
Capt. Harry P. Schenck (MC), Otolaryngology on the High Seas.
Dr. Walter Hughson, Abington, Pa., Audiometry in the Diagnosis and Treatment of Deafness in Children.
Dr. Ralph A. Fenton, Portland, Ore., Traumatisms of the Frontal Sinuses.
Dr. Frederick A. Figi, Rochester, Minn., Cystadenoma of the Larynx; Report of Four Cases.
Dr. Louis H. Clerf, Philadelphia, The Preepiglottic Space, Its Relation to Carcinoma of the Epiglottis.

Association for the Surgery of Trauma.—The American Association for the Surgery of Trauma will hold its fifth annual convention at the Edgewater Beach Hotel, Chicago, June 9-10, under the presidency of Dr. Charles S. Venable, San Antonio, Texas. Included among the speakers will be:

Dr. Donald W. Gordon Murray, Toronto, The Use of Longitudinal Wires in Bones in the Treatment of Fractures and Dislocations.
Dr. Richey L. Waugh, Boston, Ununited Fractures of the Carpal Scaphoid with a Preliminary Report on the Use of Vitallium Replicas as Replacements After Excision.
Dr. Paul B. Magnuson, Chicago, Intervertebral Disks.
Dr. Walter S. Priest, Chicago, Penicillin Therapy.

Dr. Magnuson will be toastmaster at the annual banquet Friday evening, at which Dr. Loyal Davis, Chicago, will discuss "Experiences in England, Russia and Africa." A feature of the meeting on June 10 will be a military program presented by the following:

Major William F. Stanek and Captain Wendell G. Peterson, M. C., Compound Fractures Seen in Training.
Major Boardman M. Bosworth, M. C., Treatment of Fractures in the Combat Area.
Col. Augustus Thorndike Jr., M. C., The United States Army's Reconditioning of the War Wounded.
Major Frank H. Mayfield, M. C., and Capt. Louis Levitch, D. C., Discussion of the Repair of Cranial Defects with Tantalum, Including the Operative Technic and the Procedure of Preparation of the Plate and the Report of 11 Cases.
Major Merle J. Brown, M. C., Surgery at a Higher Altitude.

Gastroenterological Meeting.—The forty-sixth annual meeting of the American Gastroenterological Association will be held at the Drake Hotel, Chicago, June 12-13, under the presidency of Dr. Sara M. Jordan, Boston. Among the speakers will be:

Drs. William F. Lipp and Ellenrose H. Eckstein, Buffalo, Clinical Significance of a Palpable Spleen.
Drs. George B. Eusterman and Hamilton Montgomery, Rochester, Minn., Xanthomatous Biliary Cirrhosis.
Egon K. F. Lorenz, Ph.D., and Dr. Harold L. Stewart, National Cancer Institute, Bethesda, Md., Induction of Tumors of the Gastrointestinal Tract by Carcinogenic Hydrocarbons.
Dr. Shields Warren, Boston, Gastritis, Its Relation to Carcinoma.
Dr. Jose Menéndez Ferros, Havana, Cuba, Electrogastrography in the Diagnosis of Cancer and Ulcer of the Stomach.
Dr. Louis A. Buie, Rochester, Endoscopic Motion Pictures in Colors of the Lesions of the Terminal Bowel.
Capt. Rupert H. Draeger (MC), Blast Injuries as Related to the Alimentary Tract and Gastrointestinal Manifestations of Underwater Blast Injuries.

There will be a symposium on the ulcer problem and a panel discussion on the application of sulfonamides to gastrointestinal disorders. At the annual dinner Joseph P. Kennedy, former ambassador of the United States to the Court of St. James's, will be the principal speaker. On this occasion the Friedenwald Medal will be presented to Drs. Anton J. Carlson and Andrew C. Ivy, emeritus professor of physiology at the University of Chicago School of Medicine and professor of physiology and pharmacology at Northwestern University Medical School, respectively.

The American Urological Association.—The fortieth annual meeting of the American Urological Association will be held at the Hotel Jefferson, St. Louis, June 19-22, under the presidency of Dr. Cyrus E. Burford, St. Louis. Included among the speakers will be:

Drs. Emerson C. Smith and Lazarus A. Orkin, Montreal, A Statistical and Clinical Study of 471 Congenital Anomalies of the Kidney and Ureter.
Drs. Charles B. Huggins and William W. Scott, Chicago, Cutaneous Ureterostomy with Contralateral Ureteral Ligation.
Dr. Lowrain E. McCrea, Philadelphia, The End Results of Prostatectomy: A Five Year Survey.
Major Arthur H. Milbert, M. C., and Major Isadore Gersh, M. C., Urolithiasis in the Soldier.
Major Lawrence H. Doolittle, M. C., and Capt. Henry B. Marshall, M. C., Penicillin Treatment of Sulfonamide-Resistant Gonorrhea.
Drs. John K. Ormond, Robert M. Cothran and James A. Singiser, Detroit, Undescended Testicle: A Report on a Series of Cases.

On Wednesday Dr. Burford will deliver his presidential address, on "Urologists of the Future." Other speakers will include Hon. Wendell Berge, assistant attorney general of the United States, on "Justice and the Future of Medicine" and Dr. Herman L. Kretschmer, President of the American Medical Association, Chicago, "A Urologist Looks at Changing Trends in Medical Practice." Another feature of the meeting will be a special program Thursday sponsored to promote cordial scientific relationships between urologists in the Americas and presented by representatives of Central and South America, Cuba and Haiti: Drs. Alejandro Palomo, Guatemala; Salvador Ortega, Guatemala; Alfonso Davalos, Quito, Ecuador; Eugenio E. Lins, Rio de Janeiro; Luis Goyanna, Rio de Janeiro, and Luis H. Rodriguez Diaz, Venezuela.

LATIN AMERICA

Health Activities in Latin America.—*Blue Cross Plan in San Juan.*—In the first quarter of 1944, 11,858 persons enrolled in the Blue Cross Plan of Puerto Rico Hospital Service Association. Robert E. Mills, executive director of the Puerto Rico Blue Cross Plan, predicted recently that by the end of the year about 50,000 persons will be enrolled as members.

Physician Builds Hospital with Funds Earned as Singer.—Dr. Ortiz Tirado, who sang for a time over the NBC system in the United States, has constructed a modern orthopedic hospital in Mexico City with funds earned while he was broadcasting. A plaque hangs over the entrance of the hospital carrying the inscription "This hospital was built through funds earned at the following broadcasting stations: . . ." Dr. Tirado sang over the NBC as "Mexico's Ambassador of Song."

Penicillin in Peru.—Dr. Telemaco Battistini, director of the Peruvian National Institute of Hygiene, states that Peru was the first Latin American country to produce and use penicillin, according to the Office of Coordinator of Inter-American Affairs. Dr. Battistini is reported to have said that the first experiments with penicillin were made at the institute of hygiene in August 1942 and that by March 1943 the drug was being used in all the chief hospitals of Lima.

Personal.—Dr. Roberto Mendiola, since 1936 professor of pathologic anatomy at the Facultad de Medicina of the Universidad de Guadalajara, Jalisco, has been named a member of the Academia Mexicana de Cirugia in recognition of his work in pathologic anatomy.——Dr. Ezequiel Martinez-Rivera, secretary of the Puerto Rico Medical Association, left Puerto Rico, May 5, to attend the annual session of the American Medical Association.——Dr. Luis F. Thomen, Ciudad Trujillo, has been appointed undersecretary of state for health and public welfare in the Dominican Republic.

FOREIGN

Penicillin Labotatory in Lisbon.—A laboratory is to be established in Lisbon for the manufacture of penicillin, the New York *Times* reported April 17. It was stated that the unit would be financed by all Portuguese pharmaceutical manufacturers.

Bombay Medical Group Observes Diamond Anniversary.—The Bombay Medical Union observed its "diamond jubilee" February 6. Speakers at the meeting included Dr. Jehangir J. Cursetji, the only surviving founder member. The first meeting was held on Dec. 22, 1883.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 29, 1944.

Penicillin in the Treatment of War Wounds

For the guidance of those concerned in the treatment of battle casualties the Penicillin Clinical Trials Committee of the Medical Research Council has issued a memorandum on the use of penicillin in the treatment of war wounds. The committee consists of leading medical and bacteriologic experts and includes Prof. H. W. Florey, who has done so much to develop the use of penicillin. Penicillin is found to have the three properties of an ideal antiseptic: It inhibits the growth of susceptible bacteria in high dilutions, it has almost no local or systemic toxicity and its action is unimpaired by serum, blood or pus. No other substance possesses these qualities to anything like the same degree, and the results of clinical trials are fully in accord with expectations. Two methods of treatment are possible, according to the memorandum: local application and systemic administration. Locally, penicillin is immensely superior to the sulfonamides; it is a much more potent bacteriostatic agent, it acts efficiently on large as well as on small numbers of bacteria and its action is not inhibited by pus. Systemic treatment consists in injecting a solution intravenously or intramuscularly with the object of maintaining a bacteriostatic concentration in the blood. This may be necessary for extensive and deep seated infections and for septicemia, but under present conditions penicillin should not be used if the responsible organism is susceptible to a sulfonamide, the memorandum states.

The action of penicillin on bacteria is highly selective. Gram positive cocci, clostridia, neisseria and Corynebacterium diphtheriae are susceptible. Proteus, Pseudomonas aeruginosa, the colon-typhoid-dysentery group and the tubercle bacillus are insusceptible. From the point of view of wound treatment the principal pyogenic cocci and the whole of the gas gangrene group are highly susceptible, while all gram negative bacteria except gonococci and meningococci are resistant. The only common wound pathogens among gram negative organisms are Proteus, Pseudomonas aeruginosa and coliform bacilli. The value of penicillin in various types of wounds and the methods by which it can be combined with surgery have not yet been established, the memorandum says. There is no suggestion that it should be applied as routine treatment in every case or that it should replace sulfonamides, it is added.

Local application of penicillin through a tube inserted into the wound is recommended as the least wasteful method and as giving the best results. The tube should be of narrow bore, so that the syringe for injection can be attached without leakage. The dressing should be applied so that the end of the tube projects through it. In most cases the solution should be injected at twelve hour intervals. Open wounds may be sprayed with the solution, although the use of a powder or cream is generally preferable. In a strength of 1,000 to 5,000 units per cubic centimeter penicillin has been injected into abscess cavities following aspiration of pus. The penicillin may remain active in the abscess cavity for over two days, after which the injection can be repeated.

Penicillin cream may be used for skin infections or surface wounds which cannot be closed, or when the nature of the wound is such that a solution cannot be retained. The cream may be spread on the wound but as a rule is spread on the gauze to be applied. Penicillin powder may be used for wounds which cannot be closed, or it may be applied preparatory to closure, it is stated.

Medical Difficulties of the Yugoslav Patriot Army

The Cairo correspondent of the London *Times* describes in a recent dispatch the primitive conditions of the medical service of the Yugoslav patriot army. Treatment of the wounded is a matter of improvisation, assisted when possible by British supplies and help. One of the few British doctors working with the Yugoslavs, who for military reasons remains anonymous, said during a visit to Cairo that the "hospitals" consisted of beds erected in peasants' cottages, often surrounded by pigs and other domestic animals. Later a hospital consisting of logs was erected in a forest, but supplies were sadly lacking. Operations usually had to be performed without an anesthetic and with no other antiseptic than salt and water. Dressings and bandages were made by the guerillas from old linen and other material. Hacksaws, carpenters' nails and hammers took the place of surgical instruments. Splints were roughly fashioned from planks and pieces of wood. Nevertheless the patients' morale was high, he reported, and when the pain became unendurable they would sing their national songs at the top of their voices. As the patriots had to be continually on the move, the wounded had to make their way as best they could from place to place. Because of deficiency of transportation they had to walk or be left behind. In the latter case, it was reported, the Germans frequently slit their throats. At times, conditions were made easier by the capture of German medical supplies or the arrival of supplies from British or American sources. Recently the undaunted Yugoslav doctors held a medical congress. While the introductory speeches were being made news of a German attack was received, so the whole congress packed up and proceeded to another town. The second sitting was also interrupted, and the congress was continued and concluded in a third town. The Yugoslav doctors complain of the absence of medical journals, which prevents them from keeping up with latest scientific progress. Though untrained, the Yugoslav girls have done valuable work as nurses in unbelievably difficult circumstances, the report concluded.

Patients in Hospital Ship Killed by Germans

Violations of rules of the Geneva Convention, to which Germany is signatory, are well known. A flagrant example is an attack on a plainly marked hospital ship. Rev. Colin Montgomery, brother of General Montgomery, stated at a "salute the soldier" meeting in England that his hospital ship had been attacked by the Germans several times. At the Salerno landing the enemy sank a well known hospital ship, fully lighted, at night. The bomb fell in the operating theater, where a major operation was in progress. All the doctors and most of the nursing staff were killed, and 250 patients lost their lives. It is impossible to mistake a hospital ship, either by day or by night. Nevertheless, the enemy have attacked and sunk many of them.

Tuberculosis an "Injury"

In medicine the distinction between disease and injury seems plain, but in law the contrary has often been true. A police constable is entitled to retire and receive a special pension for life if incapacitated for duty by infirmity of mind or body occasioned by an injury received in executing his duty. Attention has been called to the case of a constable who contracted tuberculosis which he attributed to long hours on duty without regular meals and exposure to cold, wet and physical and mental strain during air raids. On the ground that the risk of tuberculosis is common to mankind and not peculiar to a constable on duty and that injury must be distinguished from disease and must be something which happened at some particular place or time, the police authorities refused to grant the constable a pension. However, a previous decision to the con-

trary was cited by the plaintiff, An anthrax bacillus flew out of a bale of wool into a sorter's eye and fatally infected him. The court decided that this was an "accident" and said that calling the consequences of an accidental injury a disease did not alter the nature of the injury. Adopting this line of argument in the present case, the court decided that the constable had qualified for his pension. "A bacillus causes tuberculosis," said one of the judges, "and medical men speak of a tuberculous lesion; the word lesion means injury." He evidently was not aware that in medicine lesion has a wider significance, though etymologically and in its general use lesion does mean injury.

BRAZIL

(From Our Regular Correspondent)

May 3, 1944.

Iron Content of Water of Anopheline Breeding Places

The valley of the Parahiba River in the state of São Paulo, between Guararema and Queluz, is entirely free from malaria in spite of the relative abundance of anopheline species, which in other places are active agents in the spread of the disease. It is an old belief of the physicians of this district that the cause of this fact is the supposed high iron content of the water of the breeding foci of the region. In previous papers Dr. Ovidio Unti of the Malaria Division of the São Paulo State Department of Health has published the results of several studies he has undertaken to disclose the factors responsible for this so-called anophelism without malaria. One new paper, recently published, deals with the problem of the iron content of the waters of the region. Fonseca and Unti have already demonstrated that the anophelines of the Parahiba Valley are susceptible to experimental and natural infection by Plasmodium vivax and Plasmodium falciparum in this nonmalarial district and in the heavily malarious littoral of the state as well. From February 1941 to February 1943 more than a hundred samples of water from breeding foci of the region have been studied for the determination of iron content. In the paper the author contrasts these results with those obtained from water samples from the malaria stricken regions of the uplands and of the littoral, as well as from nonmalarial districts of both these regions. The iron content in all these samples of water varied widely, from 0 to 9.6 parts per million, and also in all of them the anopheline larvae could breed freely. Dr. Unti's conclusion is that the iron content of the waters of the Parahiba Valley is not the cause of the absence of malaria in that district, in spite of the existence of potential anopheline vectors.

Quantitative Iodometric Determination of Vitamin C in Citrus Fruits

The quantitative determination of vitamin C in the citrus fruits has been attempted by two main methods—by the use of a standard solution of iodine and employing the 2,6-dichlorophenolindophenol as an indicator of reduction of oxide. The iodometric determination, which is a convenient method when one is dealing with pure solutions of ascorbic acid, has been adapted for the analysis of citrus fruits by Stevens, Tauber and Kleiner, by means of strong acidification of the medium, and elimination of interfering substances. But even this method is not entirely exact for the analysis of citrus fruits, which constitutes an important practical problem. The determination through the use of dichlorophenol as an indicator, according to the technic suggested by Tillmans and Hirsch, is much better for the analysis of the citrus fruits, especially if operated rapidly and in a strongly acid medium (p_H 2.5) as recommended by Harris and Ray. As proposed by Ballentine, a solution of potassium iodate may be used instead of the iodine solution, with the advantages of a more stable solution and a more exact determination. Dr. Gilberto G. Villela of the Oswaldo Cruz Institute, a member of the Committee for the Revision of the Brazilian Pharmacopeia, has just published a paper in which he presents and discusses the results of many quantitative determinations of vitamin C made by him in citrus fruits of Brazil, using the methods referred to. Several quantitative determinations in a pure solution containing 1 mg. of ascorbic acid gave the average result of 0.98 with the iodine solution, 1.03 with the iodate solution and 1.03 with the indophenol method. The iodate method has given satisfactory results, in comparison with the indophenol method, when used to determine the vitamin C content of citrus fruits: the average content of ascorbic acid in milligrams per hundred cubic centimeters was 48.4 with the indophenol method and 48.2 with the iodate method, the average difference being only 0.2. The range of variation of the ascorbic acid content of the fruits, in milligrams per hundred cubic centimeters, was 25.2 and 67.3 for different kinds of lemons, 28.0 and 60.8 for oranges and 32.0 and 59.3 for mandarins. The treatment of the juice of these fruits by ascorbinase has demonstrated that the total amount of substance oxidized by the iodate solution was really vitamin C.

Brief Items

The new directors of the Rio de Janeiro Medical and Surgical Association, recently inaugurated for the year 1944, are Dr. Joaquim Motta, president; Drs. H. Pinheiro Guimarães and A. F. Costa Jr., vice presidents; Drs. Aurelio Monteiro, A. Campos da Paz and Helio Silva, secretaries; Dr. N. Moura Brazil, treasurer, and Drs. Waldemar Carrilho, Gil Ribeiro and Aecio Villares, editors of the *Annals* of the society.

Dr. João de Barros Barreto, director general of the National Department of Health, has been appointed as delegate of Brazil at the fifth Pan American Conference of National Health Directors, which met in Washington April 22-29.

Dr. Ary de Oliveira Lima has been appointed secretary general of health of the Federal District (city of Rio de Janeiro), succeeding Dr. Jesuino de Albuquerque, who has occupied this post since June 1940. The secretary general of health has under him the Department of Hospitals and the Department of Public Health.

Dr. Jorge Doria, surgeon of the Municipal Emergency Hospital, has been appointed director of the Department of Hospitals of Rio de Janeiro.

Dr. Arnaud Tzanck, French dermatologist, has spent a few days in Rio de Janeiro. He has been received by the National Academy of Medicine, where he read a paper on a subject of his specialty.

The University of Rio de Janeiro is now giving two specialized medical courses, one on "Child Neuriatry" under the direction of Prof. A. Borges Fortes and the other on "Neurosurgery" under the direction of Prof. Domingos F. da Costa.

Marriages

JOHN CALVIN BONNER JR., Pacolet, S. C., to Miss Mary Elizabeth Douglas of Charleston in Carlisle Barracks, Pa., April 5.

JAMES LEGRAND MOORE, Raleigh, N. C., to Miss Jean Frances Moon of Williamsport, Pa., May 12.

OTTO L. ZANEK to Miss Josephine Ross, both of Houston, Texas, in Nacogdoches, March 12.

GEORGE BRANCH PATRICK JR., Philadelphia, to Miss Muriel Jones of Stroudsburg, Pa., May 6.

CYRUS C. JOHNSON, Leland, Miss., to Miss Jean Chambless of Montgomery, Ala., recently.

CHARLES W. BEERS to Miss Ruth Cober, both of Muskegon, Mich., April 15.

Deaths

William Spencer Carter, Newton, Mass.; University of Pennsylvania Department of Medicine, Philadelphia, 1890; assistant demonstrator of pathology at his alma mater from 1891 to 1894, assistant professor of comparative physiology from 1894 to 1897 and demonstrator of physiology, 1896-1897; professor of physiology and hygiene at the University of Texas School of Medicine, Galveston, from 1897 to 1922 and dean from 1903 to 1922 and again from 1935 to 1938; in 1922 lent by the University of Texas at the request of the Rockefeller Foundation to the University of the Philippines, where he was associate dean of the medical school; in 1923 as associate director of the Medical Sciences Division of the Rockefeller Foundation, New York, he made a survey of medical education in the Philippines, Australia, South Africa, Java and New Zealand; acting director of the Peking Union Medical College, 1925-1926, on leave by the Rockefeller Foundation, conducting in the latter year survey of medical education in India; in 1934 retired as associate director of the medical sciences division of the Rockefeller Foundation, a position he had resumed in 1927, and returned to the University of Texas School of Medicine as dean; once secretary of the Galveston County Medical Society; a former member of the National Board of Medical Examiners and a member of the American Physiological Society; past president of the Association of American Medical Colleges; received the Boylston prize in 1892 and the Alvarenga prize in 1903; author of "Notes on Pathology and Bacteriology" with David Riesman, 1895, and of "Laboratory Exercises in Physiology," 1916; died May 12, aged 75.

Louis Leroy ✙ Memphis, Tenn.; Medico-Chirurgical College of Philadelphia, 1896; assistant in pathology at his alma mater in 1896; professor of bacteriology and pathology at the Illinois Medical College and Harvey Medical College, Chicago, 1899-1900; professor of bacteriology and pathology at the Vanderbilt University School of Medicine, Nashville, from 1899 to 1905; formerly professor of the principles and practice of medicine and professor of bacteriology at the College of Physicians and Surgeons; professor of medicine at the University of Tennessee College of Medicine; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the American Congress of Tuberculosis; formerly state bacteriologist and smallpox expert; vice president and acting president of the Tennessee State Board of Health from 1900 to 1906; for many years member of the Memphis and Shelby County Tuberculosis Commission; member of the House of Delegates of the American Medical Association, 1903; on the staffs of the Baptist Memorial, John Gaston and St. Joseph hospitals; pathologist at the Nashville City and St. Thomas hospitals in Nashville from 1896 to 1904; director of rescue division, American Red Cross, from Cairo to Rosedale, in Mississippi River flood in 1937; since 1940 member of the U. S. Coast Guard Auxiliary; medical member of the U. S. Local Board in Memphis during World War I; associate editor of *Examiner and Practitioner* in New York; author of "Essentials of History," "Smallpox Diagnosis, Treatment, etc." and "Pulmonary Tuberculosis"; died May 9, aged 69.

Jacob Gutman ✙ Brooklyn; Cornell University Medical College, New York, 1900; also a pharmacist; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the American Congress of Physical Therapy and the Association for the Study of Internal Secretions; past president of the East New York Medical Society; formerly professor of materia medica, College of Dentistry, University of State of New Jersey; served as professor of clinical chemistry, Jersey City College of Pharmacy, and instructor of medicine, New York Post-Graduate Medical School and Hospital; founder and director of the Brooklyn Diagnostic Institute; consulting physician, Manhattan General Hospital, New York, the Riverdale, Shore Road, Williamsburgh Maternity and Boro-Park General hospitals; attending physician, Wyckoff Heights and Unity hospitals from 1912 to 1920; director of the laboratory, Jewish Maternity Hospital, New York, from 1907 to 1910; chief of clinic, St. Mark's Hospital and German Polyclinic, New York, from 1906 to 1910; chief medical diagnostician and honorary surgeon for the New York City Police Department; at one time editor of *Archives of Diagnosis;* author of "Internal Secretions" 1924 and "Modern Drug Encyclopedia and Therapeutic Guide"; died in the Harkness Pavilion of the Columbia-Presbyterian Medical Center, New York, May 7, aged 67, of coronary thrombosis.

Karl Kornblum ✙ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1919; clinical professor of radiology at his alma mater; professor of roentgenology at the Jefferson Medical College of Philadelphia from Jan. 1, 1938 to Jan. 1, 1943; served as associate professor of radiology at the University of Pennsylvania Graduate School of Medicine from 1933 to 1938; diplomate of the National Board of Medical Examiners and specialist certified by the American Board of Radiology, Inc.; member of the American Roentgen Ray Society, Radiological Society of North America, Inc., American Society for the Control of Cancer and the American College of Radiology; former president Philadelphia Roentgen Ray Society; attending roentgenologist at the Jefferson Medical College Hospital; in 1937 appointed to membership in a council, sponsored by the American Society for the Control of Cancer, to coordinate cancer activities; died in the University of Pennsylvania Hospital May 16, aged 51, of cerebral hemorrhage.

Henry Bush Beeson ✙ Racine, Wis.; the Hahnemann Medical College and Hospital, Chicago, 1908; Northwestern University Medical School, Chicago, 1912; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; vice president of the Milwaukee Society of Otolaryngology, 1940-1941; served in France as a captain of the 142d division during World War I; on the staff of the Sunny Rest Sanatorium; on the staff and chief of the department of ophthalmology and otolaryngology, St. Mary's Hospital; a member of the associate staff of St. Luke's Hospital; died March 4, aged 62.

Frank Lester Winsor ✙ Laurens, N. Y.; Bellevue Hospital Medical College, New York, 1894; for many years health officer, school physician, trustee and president of the village; for twenty years a member of the board of education, serving most of that time as president; a member of the exemption board in the Oneonta area during World War I; formerly medical superintendent of the Otsego County Sanatorium, Mount Vision; on the consulting staff of the Aurelia Osborn Fox Memorial Hospital, Oneonta; a director of the Citizens National Bank and Trust Company; died in Morris March 15, aged 74, of coronary disease.

Seth De Zell Hawley, Tulsa, Okla.; University Medical College of Kansas City, Mo., 1903; member of the State Medical Association of Texas; at one time member of the city council and city superintendent of public health; examining physician for the army induction service in Tulsa during World War I and in Atlanta, Texas, during World War II; one of the organizers, formerly vice president and medical director of the Atlas Life Insurance Company; on the staff of the Ellington Memorial Hospital and president of the Rotary Club of Atlanta, Texas; died in Atlanta, Texas, March 3, aged 66, of heart disease.

Leonard Russell Donne, Brooklyn; Long Island College Hospital, Brooklyn, 1928; member of the Medical Society of the State of New York; fellow of the American College of surgeons; specialist certified by the American Board of Orthopaedic Surgery, Inc.; associate orthopedist at the Long Island College Hospital, associate fracture surgeon, Greenpoint Hospital, and assistant orthopedist at St. Mary's and St. Charles hospitals; died in the Mount Vernon Hospital, Mount Vernon, N. Y., March 7, aged 48, of injuries received when the automobile in which he was driving collided with a bus.

Roscoe Edward Conklin, Portland, Ore.; University of Colorado School of Medicine, Denver, 1935; member of the Oregon State Medical Society; a teaching fellow in clinical medicine at the Georgetown University School of Medicine, Washington, D. C., 1936-1937; associated with the Taylor Richardson Clinic, Ellensburg, Wash., from 1937 to 1940; fellow in medicine, University of Minnesota Graduate School, Minneapolis-Rochester, 1940-1942; died in the Scripps Metabolic Clinic, La Jolla, Calif., March 18, aged 34, of cerebral hemorrhage.

Herbert Clyde Anderson ✙ Brooklyn; Long Island College Hospital, Brooklyn, 1896; veteran of the Spanish-American War; on the staff of the Long Island College Hospital; died March 31, aged 68, of tuberculosis.

Oscar Nels Ash, Goshen, Ohio; University of Cincinnati College of Medicine, 1924; died in the Holmes Hospital, Cincinnati, February 27, aged 46, of brain tumor.

Joseph P. Aydlotte, Earl, N. C.; Kentucky University Medical Department, Louisville, 1901; member of the Medical Society of the State of North Carolina; on the staff of the Shelby Hospital, Shelby; died March 15, aged 78, of chronic myocarditis.

Calvin Bates, Cambridge, Ohio; Miami Medical College, Cincinnati, 1886; served as county coroner; jail physician; died in St. Francis Hospital March 28, aged 87, of lobar pneumonia following influenza.

George Francis Bates, Portland, Maine; Long Island College Hospital, Brooklyn, 1885; for many years practiced in Yarmouth; member of the Maine Medical Association; in June 1935 received the association's gold medal for completion of fifty years in the practice of medicine; died in the Maine General Hospital March 6, aged 84, of lobar pneumonia and lymphatic leukemia.

Flavius Jasper Beck, Columbus, Ind.; Kentucky School of Medicine, Louisville, 1890; member of the Indiana State Medical Association; formerly coroner of Bartholomew County; served during World War I; died in the Veterans Administration Facility, Marion, March 27, aged 81, of hypertensive heart disease.

James Marshall Bell, Rochester, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1879; member of the Illinois State Medical Society and of its "Fifty Year Club," served as a representative in the Illinois General Assembly from 1910 to 1914; formerly president of the village board; since 1912 president of the Rochester State Bank; a member of the Sangamon County exemption board during World War I; died in St. John's Hospital, Springfield, March 23, aged 87, of bronchopneumonia.

James M. Billman, Sullivan, Ind.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1896; member of the Indiana State Medical Association; died March 27, aged 79, of chronic myocarditis.

Silas Oliver Clason, Gardiner, Maine; Medical School of Maine, Portland, 1904; member of the Maine Medical Association; since 1919 on the staff of the Gardiner General Hospital; died March 2, aged 64, of angina pectoris.

Fred J. Clippert, South Rockwood, Mich.; Chicago Medical College, 1890; served as president of the village of Delray, member of the board of water commissioners of Detroit and secretary of the board of pension examiners of Wayne County; died in St. Petersburg, Fla., March 26, aged 77, of carcinoma of the prostate and coronary occlusion.

John Paul Earnest Jr. ✠ Washington, D. C.; George Washington University School of Medicine, Washington, 1923; at one time professor of medical jurisprudence at his alma mater; on the visiting staffs of the Doctors Hospital and the Emergency Hospital, where he died May 8, aged 45, of heart disease.

Asa Gaston DeLoach, Atlanta, Ga.; University of Georgia Medical Department, Augusta, 1906; member of the Medical Association of Georgia; served during World War I; on the staff of the Crawford W. Long Memorial Hospital; died in the Veterans Administration Facility March 15, aged 64, of arteriosclerotic heart disease.

Herbert Franklin Gross ✠ Harrisburg, Pa.; Jefferson Medical College of Philadelphia, 1899; fellow of the American College of Surgeons; served as president of the Harrisburg Academy of Medicine; a charter member of the hospital board and staff, served as medical director, and chief surgeon at the Harrisburg Polyclinic Hospital, where he died January 26, aged 68, of acute myocardial infarction.

Abraham D. Halperen, Philadelphia; Medico-Chirurgical College of Philadelphia, 1905; died in the Pennsylvania Hospital January 27, aged 60, of bronchiectasis.

William Perry Hunnicutt, Los Angeles; College of Physicians and Surgeons, Medical Department of Kansas City University, Kansas City, Kan., 1898; member of the Colorado State Medical Society; served on the staffs of various hospitals and institutions in the state of Colorado; died February 10, aged 81, of heart disease.

Charles Bernard Lunsford, Goshen, Ind.; Chicago College of Medicine and Surgery, 1907; served as health officer of Elkhart County; died March 7, aged 72, of chronic myocarditis, diabetes mellitus and cerebral thrombosis.

Edward A. McClellan, McClellanville, S. C.; Atlanta College of Physicians and Surgeons, 1902; died March 4, aged 71, of hypertensive heart disease, decompensation, arteriosclerosis and epilepsy.

George Lincoln McCullough, Mechanicsburg, Ohio; Ohio State University College of Medicine, Columbus, 1934; member of the Ohio State Medical Association; served as a member of the Champaign County Board of Health; died March 2, aged 35, of endocarditis and undulant fever.

William Robert McGuirk ✠ Providence, R. I.; Columbia University College of Physicians and Surgeons, New York, 1892; chairman, board of hospital commissioners; member of the staffs of St. Joseph's, Miriam and Homeopathic hospitals; formerly on the staff of the Rhode Island Hospital; in 1936 received the doctor of laws degree from Providence College; died March 12, aged 72, of coronary thrombosis.

Albert Rowcliffe Moffit ✠ Poughkeepsie, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1904; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; for thirty-seven years surgeon at the Vassar Brothers Hospital; died March 20, aged 67, of coronary occlusion.

Frank Edmoundson Nabers, Birmingham, Ala.; University of Virginia Department of Medicine, Charlottesville, 1903; also a pharmacist; member of the Medical Association of the State of Alabama; on the staff of St. Vincent's Hospital; died March 10, aged 73, of cerebral hemorrhage.

Mixon Lucius Newsome, Dothan, Ala.; Meharry Medical College, Nashville, Tenn., 1927; died March 11, aged 44.

John Gilbert Null, Anderson, Calif.; College of Physicians and Surgeons of San Francisco, 1906; at one time adjunct professor of mental and nervous diseases at his alma mater; justice of the peace for many years; died March 12, aged 74, of Parkinson's disease.

Patrick Francis O'Farrell, Mount Olive, Ill.; Loyola University School of Medicine, Chicago, 1916; member of the Illinois State Medical Society; veteran of World War I; a captain in the medical reserve corps of the U. S. Army from Jan. 10, 1941 to Jan. 22, 1942; local railroad surgeon; on the staff of St. Francis Hospital, Litchfield, where he died March 21, aged 57, of hemiplegia.

Richard S. Watkins, Phenix City, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1881; member of the Medical Association of the State of Alabama; died in Anniston, January 29, aged 84, of pulmonary tuberculosis.

DIED IN MILITARY SERVICE

Courtland Beeler, Louisville, Ky.; University of Georgia Medical Department, Augusta, 1927; began active duty as a captain in the medical corps, Army of the United States, on July 1, 1942; died in England April 9, aged 42, of coronary thrombosis.

William Morgan Haller ✠ Bemidji, Minn.; University of Nebraska College of Medicine, Omaha, 1933; began extended active duty as a captain in the medical corps, Army of the United States, on July 31, 1942; later promoted to major; died in Everett, Pa., March 11, aged 33, of injuries received in an automobile accident.

Nathan Shuser ✠ Lemoyne, Pa.; Syracuse University College of Medicine, 1929; served an internship at the Hamot Hospital, Erie, and a residency at the Harrisburg Hospital, Harrisburg; began active duty as a captain in the medical corps of the Army of the United States on Dec. 14, 1942; died in Camp Davis, N. C., April 14, aged 41, of cardiac failure, acute pulmonary edema and brain abscess.

Edward Eyster Sprenkel ✠ Jenkintown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1923; specialist certified by the American Board of Otolaryngology; lieutenant commander, medical corps, U. S. Naval Reserve; died in the United States Naval Hospital, Philadelphia, January 23, aged 44, of carcinoma of the sigmoid.

Warren Nelson Steele Jr., Modesto, Calif.; University of Southern California School of Medicine, Los Angeles, 1937; member of the California Medical Association; commissioned a first lieutenant in the medical corps, Army of the United States, on June 11, 1942 and later promoted to captain; died in Barksdale Field, La., Aug. 23, 1943, aged 32, in an airplane accident.

Orrin Endre Swenson, Stoughton, Wis.; University of Wisconsin Medical School, Madison, 1938; captain in the medical reserve corps, U. S. Army, attached to the Air Corps; a flight surgeon of a service command stationed in India for more than a year; chief medical officer of Seymour Johnson Field, North Carolina, where he died Dec. 21, 1943, aged 30.

Correspondence

PSYCHIATRIC ASPECTS OF MARIHUANA INTOXICATION

To the Editor:—In THE JOURNAL, April 1, you published a communication from J. Bouquet, M.D., expert on the Narcotics Commission of the League of Nations, Hospital Sadiki, Tunis, in which he takes a page and a half to discuss the paper by Dr. Samuel Allentuck and myself entitled "The Psychiatric Aspects of Marihuana Intoxication," which appeared in the *American Journal of Psychiatry* for September 1942. This communication appears to suggest that we have made our results known to the public in some undesirable and improper manner and, by giving partial quotations of Dr. Lawrence Kolb's discussion of this paper, gives a quite incorrect impression.

Our paper represented material from a study carried out by the Mayor's Committee on the Studies of Marihuana and sponsored by the New York Academy of Medicine. A volume will be issued shortly giving all this material in detail, so that I shall do nothing more than point out what I consider improper accusations and statements on Dr. Bouquet's part. The paper was presented at the meeting of the American Psychiatric Association and published in the *American Journal of Psychiatry*. It was not given out to the public by either of the authors.

It also seems to me that, in fairness to the authors of this paper and to Dr. Kolb, he should have given complete quotations where a partial quotation gives a very different idea. I should like to add the following quotations from Dr. Kolb's discussion, which, if they had appeared in Dr. Bouquet's letter, would have given an entirely different impression: "In view of the misinformation and alarm that has gotten abroad about marihuana, it is important to have a competent group like the Mayor's Committee to study this drug and present the real facts. In the meantime Dr. Allentuck's timely paper will tend at least to get physicians' feet back on the ground. The case against marihuana has been very much overdrawn. . . ." And "It is reassuring to find, from the careful study which Dr. Allentuck has made, that the alarm about the relation of marihuana to crime is unfounded." Any one reading Dr. Bouquet's letter would never have realized that Dr. Kolb made such statements as these.

Medical and popular literature is filled with old wives' tales about the effects of various narcotic drugs. It is somewhat surprising to find objection to the publication of carefully worked out studies on the ground that it is improper and dangerous rather than to raise the one issue of science—was the study carried out in a proper scientific manner and are the authors justified in drawing the conclusions that they did from the studies made?

KARL M. BOWMAN, M.D., San Francisco.

RHEUMATIC FEVER PROGRAM OF THE CHILDREN'S BUREAU

To the Editor:—I have just read the report in the April 29 issue of THE JOURNAL in which Dr. W. W. Bauer made a reference to the rheumatic fever program and included some statements about it which are rather misleading and others which are in error.

In order to keep the record straight, I should like to summarize briefly the background in the development of this phase of the crippled children's program. Since the first meeting of the Children's Bureau Advisory Committee on Services for Crippled Children, held in 1935, there had been evidence of the interest of the Advisory Committee in the problems related to the needs of the child with rheumatic fever and heart disease. During the initial period in the development and extension of state services for crippled children, the Children's Bureau was repeatedly approached by state agencies and professional and lay groups to include the rheumatic child in the crippled children's program. In 1938 region I of the American Academy of Pediatrics passed a formal resolution urging such action. At each of the meetings of the Advisory Committee (held annually except in 1939) this subject was given full consideration, and at the meeting held on Dec. 2, 1938 the Advisory Committee recommended that the bureau seek additional federal funds in order to assist state crippled children agencies in the development of services for the rheumatic child. In 1939 the Children's Bureau presented to Congress the needs for additional funds for the crippled children's program and presented evidence regarding the needs of children with rheumatic fever and heart disease. On the basis of the evidence given, Congress amended title V, part 2, of the Social Security Act, authorizing an additional annual appropriation of $1,000,000 for services for crippled children.

Rheumatic fever programs developed in connection with state services for crippled children now are in operation in seventeen states. The programs are not administered by the Children's Bureau but are developed entirely as state programs similar to the regular crippled children services. The Children's Bureau serves only in an advisory and consultative capacity in the development of the plans and of course provides financial assistance through the funds appropriated by Congress.

The points which I wished to make clear were that the rheumatic fever program was not developed under an authority for experimentation and demonstration in medical care but as an integral part of the existing services for crippled children under the provisions of title V, part 2, of the Social Security Act; it is administered by state crippled children agencies, which are not always state health departments; the program was developed after full consideration on several occasions by the Children's Bureau Advisory Committee on Services for Crippled Children; and, finally, the programs are planned and administered entirely by state agencies under the provisions of title V, part 2, of the Social Security Act.

A. L. VAN HORN, M.D., Washington, D. C.
Assistant Director for Crippled Children,
Division of Health Services.

DIAGNOSIS OF MENINGOCOCCIC INFECTIONS

To the Editor:—I was interested in the editorial comment in the April 22 issue entitled "Aid to Diagnosis of Meningococcic Infections." This referred to the work of W. G. Bernard and A. C. Jordan which reported the presence of meningococci in smears from purpuric lesions.

The presence of petechial and purpuric lesions in meningitis in the so-called spotted form of the disease is usually not a frequent occurrence except during certain epidemics. In the epidemic in Texas in 1912, which I reported, the incidence was less than 1 per cent. However, it is particularly important in this form of the disease to establish other aids in the diagnosis, and the findings of the authors is therefore a valuable one.

The spotted form of the disease is an expression of the fulminating type of meningitis. This type is characterized by severe general sepsis in this early and often fatal stage even before meningitis itself is established.

In view of my experience with this form of the trouble in epidemiologic studies, I especially called attention in my monograph on this disease in 1913 to the value of other aids in diagnosis since, as I mentioned, the spinal fluid may be entirely negative in the early premeningitic stage. Of course, blood culture is an aid, but it takes too long for diagnosis.

I called attention in 1913 to the following examinations particularly: 1. In the examination of the purulent discharge in

conjunctivitis, which is very frequently present in all types of meningococcic meningitis, smears show large numbers of typical gram negative diplococci. 2. The examination of herpetic fluid, likewise a common finding, shows meningococci in smears. 3. The examination of the urine during the early phase often shows meningococci in large numbers.

Other foci showing the meningococcus are otitis media discharge, joint effusions, pleural and pericardial effusions and sputum in cases of meningococcic pneumonia. However, these are later complications of meningitis and would be of no assistance in the early diagnosis.

ABRAHAM SOPHIAN, M.D., Kansas City, Mo.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, May 27, page 302.

[redacted] IN SPECIALTIES

AMERI[redacted]TOLOGY: *Oral.* Chicago, June [redacted], Dr. C. Guy Lane, [redacted] St., Boston.

[redacted]AN BOARD OF INTERNAL MEDICINE: *Written.* Various centers, Oct. [redacted]. Candidates in military service may take examination at their place of duty. Final date for filing application is August 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY. Chicago, June 5. Sec., Dr. Paul C. Bucy, 912 S. Wood St., Chicago.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY. *Oral. Part II.* Pittsburgh, June 7-13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, June 2-5. Chicago, Oct. 5-7. Sec., Dr. S. Judd Beach, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written. Part I.* Chicago, New Orleans, New York and San Francisco, October. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* New York City, June 1-4, Chicago, Oct. 4-7. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PATHOLOGY: *Oral and Written.* Chicago, June 7-8. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Sept. 22. *Oral.* St. Louis, Nov. 8-9. Final date for filing application is Aug. 15. Sec., Dr. C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Part I. Various centers, October 25. Final date for filing application is August 15. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Arm of Insane Patient Fractured in Attempt at Restraint.—The patient, a woman about 33 years of age, had suffered from dysmenorrhea and difficult menstruation since puberty. There was evidence that as her menstrual period approached she had "spells" but that otherwise her mental condition was "good." She had completed satisfactorily the seventh or eighth grade at school and was able to take care of herself, to do housework, to make her own clothes and to help with farmwork. On the other hand, the superintendent of a state hospital in which she had been temporarily confined testified that she was suffering from dementia precox that had set in at puberty and that while in the hospital she exhibited hallucinations and delusions and was violent. In June 1941 she was taken—for just what reason is not clear—to a "clinic" conducted by the defendant physician and remained there for about eight days. Her family visited her soon after admittance and, according to their testimony, she seemed "bright, smiling and in good condition." The defendant physician stated that after admission to his clinic she became increasingly violent, made grotesque motions, stabbed at the walls with the tableware, tore out the electric light, refused to take the medicine prescribed for her and became frightening to the nurses. One day she became unruly and, so the physician stated, she got under her bed and in attempting to get her out he pulled her arm and fractured the humerus. He could not set the fracture because the patient refused "to have him put a dressing on." Sometime later, at least twenty-four hours, he called her family, who went to the clinic and found her highly nervous and in a disturbed mental condition. There were bruises of an aggravated nature all over her body, face, hips and limbs. Her arm was swollen to an "enormous" size and hanging down by her body. The family was advised to remove her from the clinic, as the clinic was not prepared to handle a case of that sort. The family testified that the defendant physician, on being asked what should be done, told them to tie something around the broken arm and let it hang down and gave them some chloral hydrate, without instructions as to the dosage. The chloral hydrate was not used because of the labeling of poison on it. Later the patient was taken to another hospital, where her arm was put in a cast. There was evidence that, whereas the patient's mental condition had been reasonably good up to the time of her admittance to the defendant's clinic, thereafter she was practically insane and at times had to be tied or kept in a wire cage.

Suit was subsequently instituted against the defendant physician for alleged malpractice. At the trial, Dr. Beale, who had treated her for about two years prior to her admittance to the clinic, testified generally in support of the patient's claims. Among other things he stated that, because of the failure to reduce the patient's fracture, there was a malformation at the broken place which interfered with the free movement of the arm and was calculated to injure the surrounding tissue and produce pain. He further testified that the accepted practice in the treatment of fractures such as was suffered by the patient was to reduce the fracture and immobilize it as soon as possible. In this conclusion he was corroborated by another physician witness. This second physician stated that the accepted practice when a person has a fracture and does not agree for a physician to set the broken limb is to administer anesthesia and then use force enough to hold the patient quiet while the fracture is set and bandage applied. At the close of the evidence, the trial court granted a motion for a nonsuit and the patient appealed to the Supreme Court of North Carolina.

In refusing to permit the jury to pass on the case, the trial court remarked "I don't conceive it to be the law, if doctors cannot agree, to ask the jury to agree on the case." Students of this branch of jurisprudence, said the Supreme Court, are not unfamiliar with the doctrine the judge probably had in mind. Applying it in extreme form, it has sometimes been held that no verdict affirming malpractice can be rendered in any case without the support of expert medical opinion. Any case must be articulated from the facts. The inhibition is not against the admission of nonexpert testimony, since lay witnesses are permitted to give only factual testimony; it is against conclusions by the jury, who are themselves laymen, on the facts in evidence. "Between the postulated facts and the rationalization by the jury, there could be no commerce except in the presence of the professional catalytic." Here it is suggested that the failure of expert witnesses to be in substantial accord lets the jury out of the picture altogether. In cases involving the application of scientific knowledge peculiar to that branch of learning, there is no question that the rules of evidence requiring expert opinion in matters of scientific knowledge ought to be carefully enforced, both in the interest of justice and in the protection of a profession peculiarly liable to suit when, after exhausting every known resource and applying the highest degree of skill, the result is not what the patient, or friends desire or hoped for. It is often said that the physician does not insure the result; and that is simply to say that he is not God and does not hold in his hand all the issues of life. But often the difficulty of establishing malpractice does not arise out of rules requiring the evidence of experts as to matters of peculiarly scientific learning and practice. Often the reason has nothing particularly to do with the question of scientific knowledge or skill in its application, but rather the contrary. It is

the reluctance to permit the jury to draw inferences from the facts because of what has been long regarded as the peculiar nature of medical knowledge and practice, which among the professions makes it *sui generis* in the face of challenge. The usual argument which has relegated the decision of malpractice cases to the opinion of professional men and thence to the court, as distinguished from the jury, is that the practice of medicine and surgery is empiric—which means that it has not yet become a matter of scientific knowledge or proceeding. The implication is that only a physician can know from his own actuarial or statistical experience, or that of others handed down to him, what is good or bad practice in any case. On this theory the physician, instead of being an expert in scientific learning and methods, is an expert in the trial and error results which are nowhere available except in the arcana of the profession. Many opinions afford a curious blending of views as to the scientific and empiric status of the profession, with consequent confusion as to the result. But, continued the court, science literally rules in the vast field of medicine and surgery, rather than the empiric standards which have formerly proved helpful without any particular scientific understanding of the reason why. One of the incidental obligations of science imposed on professional men is that they shall be judged by the standards of the science they profess, and not wholly by empirical standards, vague and indefinite, and incapable of scientific expression, behind which may lurk charlatanry and quackery. Thus in the most recently collected authorities, the empiric basis of complete cloture is wholly lacking. They stress the necessity of enforcing the rule against the admission of lay opinion on matters peculiarly within the domain of expert scientific knowledge which belongs to the profession. They follow the general rule, which, in the nature of things, has a wide coverage and regard malpractice ordinarily as unproved, or totally wanting in evidence, when such expert testimony is lacking. But they uniformly recognize exceptions to the rule—or, rather, recognize instances where the rule is inapplicable—where the facts are so clearly within the common knowledge and experience of laymen that they may be reasonably interpreted by the jury.

In the case at bar, continued the court, there were two outstanding features which must be separately considered: First, is the evidence that the defendant, while his patient was admittedly in an insane condition, applied such force to her arm—"jerked" it, as to break it. No reasonable person would contend that the breaking of the patient's arm was either necessary or desirable in treating her for her dysmenorrhea, nervousness or insanity. The factual particulars with regard to the breaking of the arm—the force used and the circumstances under which it was used—are matters for the jury. If these facts are all established contrary to the contentions of the defendant, what follows? In the face of an extraordinary occurrence like this, may the jury draw no inference adverse to the defendant on the issue of malpractice because of the absence of expert testimony?

The second item of evidence, said the court, refers to the treatment of the patient after the arm had been broken—the failure to immobilize or set the limb immediately or within a reasonable time after it had been broken, to the knowledge of the defendant physician. Various reasons were stated by the physician as to why this was not done, but we are considering the evidence of the patient. That evidence is that the limb was not immobilized, the bones were not set, nor the fracture reduced, for an extended period while the patient was still in the care of the physician; and on her being taken away from the hospital by her relatives and family, the defendant advised them to wrap a cloth around the arm and let it hang. As to this phase of the alleged malpractice there is, however, expert medical testimony from which inferences may be drawn condemnatory of the practice. For that reason we enter into no controversial discussion as to the extent to which the breaking of the arm might speak for itself. It is required of a physician who has undertaken the care and treatment of a patient not only that he have a reasonable amount of the knowledge and skill he holds himself out to have but that he use it in the treatment of the patient—make it available to the patient. After the relation has been established, unless otherwise limited in the contract of employment, it cannot be terminated at the mere will of the physician but must last until the treatment is no longer required or until it is dissolved by the assent of the parties or until reasonable notice is given in order that the patient may have an opportunity to engage the services of another. In addition to what we have said, some aspects of the evidence may give rise to an inference of abandonment for which, if it actually occurred, the defendant physician would be liable. We see no point in taking the case away from the jury because the physician witnesses could not agree. The decision is not for them, nor is the verdict of the jury an opinion. It is the determination of the truth from the evidence. In controversies about inventions and patents, about delicate and complicated machinery, about construction and engineering practices, and in dozens of other matters about which the unaided juror knows little or nothing, where disagreement often exists among the experts, the jury has the final say. The case at bar may be conceived to be somewhat simpler. Taking the evidence in the most favorable light to the plaintiff, she was entitled to have it submitted to the jury. The judgment sustaining the motion for judgment of nonsuit was accordingly reversed.—*Groce v. Myers, 29 S. E. (2d) 553 (N. C., 1944).*

Society Proceedings

COMING MEETINGS

American Medical Association, Chicago, June 12-16. Dr. Olin West, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Tuberculosis Physicians, Chicago, June 13. Dr. Oscar S. Levin, P. O. Box 7011, Denver, Colo., Secretary.

American Association for the Surgery of Trauma, Chicago, June 9-10. Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.

American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 8-10. Dr. Charles C. Higgins, 2020 E. 93d St., Cleveland, Secretary.

American Broncho-Esophagological Association, New York, June 6. Dr. Paul H. Holinger, 700 N. Michigan Ave., Chicago, Secretary.

American College of Allergists, Chicago, June 10-11. Dr. Fred W. Wittich, 401 LaSalle Medical Bldg., Minneapolis 2, Secretary.

American College of Chest Physicians, Chicago, June 10-12. Dr. Paul H. Holinger, 500 N. Dearborn St., Chicago, Secretary.

American Diabetes Association, Chicago, June 11. Dr. Cecil Striker, 630 Vine St., Cincinnati 2, Secretary.

American Federation for Clinical Research, Chicago, June 12-13. Dr. Thomas M. Durant, 3401 N. Broad St., Philadelphia 40, Secretary.

American Gastro-Enterological Association, Chicago, June 12-13. Dr. J. Arnold Bargen, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Gynecological Society, Hershey, Penna., June 19-21. Dr. Howard C. Taylor Jr., 842 Park Ave., New York 21, Secretary.

American Laryngological Association, New York, June 7-8. Dr. Arthur W. Proetz, 3720 Washington Blvd., St. Louis, 8, Secretary.

American Laryngological, Rhinological and Otological Society, New York, June 9-10. Dr. C. Stewart Nash, 237 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, Chicago, June 10-11. Dr. Carroll L. Birch, 2045 Sedgwick St., Chicago, Secretary.

American Physicians' Art Association, Chicago, June 12-16. Dr. F. H. Redewill, 536 Flood Bldg., San Francisco, Secretary.

American Proctologic Society, Chicago, June 11-13. Dr. W. H. Daniel, 1930 Wilshire Blvd., Los Angeles 5, Secretary.

American Society for Research in Psychosomatic Problems, Chicago, June 10-11. Dr. Edwin G. Zabriskie, 115 East 61st St., New York, Secretary.

American Therapeutic Society, Chicago, June 10. Dr. Oscar B. Hunter, 1835 I St. N.W., Washington 6, D. C., Secretary.

American Urological Association, St. Louis, June 19-22. Dr. Thomas D. Moore, 899 Madison Ave., Memphis, 3, Tenn., Secretary.

Association for Research in Ophthalmology, Chicago, June 13. Dr. B. F. Payne, School of Aviation Medicine, Randolph Field, Texas, Secretary.

Association for the Study of Internal Secretions, Chicago, June 12-13. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City, Secretary.

Maine Medical Association, Rockland, June 25-27. Dr. Frederick R. Carter, 142 High Street, Portland 3, Secretary.

National Gastroenterological Association, New York, June 7. Dr. G. Randolph Manning, 1819 Broadway, New York 14, Secretary.

Society for Investigative Dermatology, Chicago, June 13. Dr. S. W Becker, 55 E. Washington St., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

27:289-432 (March) 1944

Effect of Certain Substances on Intrahepatic Circulation of Blood in Intact Animal. K. G. Wakim.—p. 289.

Auriculoventricular Block with Ventriculoauricular Response: Report of 6 Cases and Critical Review of Literature. M. Winternitz.—p. 301.

Cardiovascular Dynamics in Patients with Angina Pectoris. M. D. Altschule.—p. 322.

*Critical Evaluation of Cardiac Mensuration in Treatment of Addison's Disease with Desoxycorticosterone Acetate. T. H. McGavack.—p. 331.

Production of Nephrosclerosis and Cardiac Hypertrophy in Rat by Desoxycorticosterone Acetate Overdosage. H. Selye and C. E. Hall.—p. 338.

Intraventricular Block with Ectopic Beats Approaching Normal QRS Duration. A. J. Simon and R. Langendorf.—p. 345.

Effect on Plasma Volume of Dehydration Produced by Low Salt Diet and Ammonium Chloride. R. H. Lyons, S. D. Jacobson and N. L. Avery Jr.—p. 353.

*Circulation in Man in Certain Postures Before and After Extensive Sympathectomy for Essential Hypertension: I. Physiologic Aspects. E. E. Gambill, E. A. Hines Jr. and A. W. Adson.—p. 360.

*Circulation in Man in Certain Postures Before and After Extensive Sympathectomy for Essential Hypertension: II. Effect of Certain Mechanical Agents and Paredrinol on Blood Pressure and Pulse Rate. E. E. Gambill, E. A. Hines Jr. and A. W. Adson.—p. 381.

Comparison of Total Vibrations Obtained from Normal, Rapidly Dying, Human Heart with Those Obtained in Chronic Myocardial Disease. W. B. Koutz and S. T. Wright.—p. 396.

Delayed Diastolic Murmur Associated with Ventricular Ectopic Beats: Phonocardiographic Studies. H. Weyler.—p. 409.

Cardiac Mensuration in Addison's Disease.—According to McGavack the reciprocal activity of sodium and desoxycorticosterone acetate in maintaining the patient with Addison's disease has been previously demonstrated according to the equation $Na \times D = k$, where Na represents the daily ingestion of sodium in grams, D the daily requirement of desoxycorticosterone acetate in milligrams, and k a constant for which, in 8 patients, values between 30 and 45 have proved satisfactory. Cardiac mensuration has been used as an index of the degree of sufficiency of the treatment, and it has been found that, within limits, the size of certain cardiac measurements, notably the cardiothoracic ratio, frontal cardiac area and total cardiac volume, vary directly with the condition of the patient. As the patient improves a concomitant increase occurs in the proportions of the abnormally small heart associated with untreated Addison's disease. The author stresses the limitations of cardiac mensuration as a guide to the amount of desoxycorticosterone acetate and sodium which should be administered to any patient with Addison's disease at a given time. Some 200 observations of cardiac size in 13 patients with Addison's disease served as a basis for this study. Eight of the patients have been seen in crisis and followed under treatment with desoxycorticosterone acetate and measured amounts of sodium for periods varying from twenty weeks to four years. Individual variations in cardiac size and errors inherent in the technical procedures for carrying out cardiac mensuration must be considered. The equation is not applicable to (*a*) patients in crisis and for short periods after the control of crisis; at such times, larger amounts of sodium and desoxycorticosterone may be used with relatively small upward alterations in the cardiac silhouette; (*b*) patients under control for long periods of time who inadvertently or purposely utilize more than the prescribed amount of either sodium or desoxycorticosterone acetate, or both, despite which the cardiac measurements may remain well within normal limits, while hypertension or other toxic symptoms appear.

Circulation Before and After Sympathectomy for Hypertension.—The effect of posture on the circulation has assumed increasing significance since the syndromes of spontaneous and of postoperative orthostatic hypotension have been recognized clinically. The relatively recent introduction of extensive sympathectomy for the relief of essential hypertension has resulted in opportunities for seeing and studying certain persons who have orthostatic hypotension and orthostatic tachycardia after this type of operation. Ten patients were studied in the horizontal and 60 degree head up postures before and after extensive sympathectomy for essential hypertension. The observations were as follows: 1. The pulse rate was faster in both postures after sympathectomy. 2. When patients were changed from the horizontal to the 60 degree head up posture the systolic blood pressure fell twice as much and the diastolic pressure fell seven times as much after, as before, operation. 3. The difference in blood pressure between the leg and the arm showed a slight tendency toward an increase after sympathectomy, which was contrary to what was expected. 4. Significant decreases in pulse pressure in the arm and leg followed sympathectomy. These decreases were greatest when the patients were in the head up posture, and especially great among those who had postoperative orthostatic hypotension. 5. The performance of the Flack test was much impaired after sympathectomy. The greatest impairment occurred when the patients were in the head up posture and among patients with postoperative orthostatic hypotension. The systolic blood pressure during this test fell eight times as much, and the systolic rebound pressure was only two-thirds as great after operation as before operation. 6. The circulation time from arm to foot in the head up posture decreased after operation in cases in which reductions in blood pressure were minimal to fair; it increased after operation in cases in which reductions in blood pressure were great. 7. The circulation time from foot to arm was unobtainable in the head up posture on the tilt table, apparently because of stagnation of the solution used for testing in the injected limbs. 8. Only those patients who had excellent reductions in blood pressure after sympathectomy had a real decrease in response to the cold pressor test. 9. After sympathectomy the cardiac output was apparently greater in both postures. However, the cardiac output was less in the head up posture than in the horizontal before, as well as after, sympathectomy. This difference was greater after operation and was greatest in cases in which much postoperative orthostatic hypotension developed. 10. The stroke volume was increased in both postures after sympathectomy, but it was less when the patients were in the head up posture. 11. The basal metabolic rate was decreased in both postures after sympathectomy. An actual increase in the basal metabolic rate apparently may occur while the patient is exhibiting a decrease in blood pressure in response to the head up posture. 12. The volume of the leg on standing erect was decreased after sympathectomy; the average decrease was 7.3 per cent of the total preoperative volume. The exact reason for this unexpected observation has not been discovered.

Effects of Mechanical Agents and Paredrinol on Blood Pressure After Sympathectomy.—Ten cases of essential hypertension were studied before and after extensive splanchnic sympathectomy. The following observations were made: The use of a tight abdominal binder was of considerable benefit in counteracting excessive degrees of postoperative orthostatic hypotension and tachycardia. To be effective, the binder must be properly applied. The fact that the binder had little effect preoperatively or postoperatively in those cases in which orthostatic hypotension and orthostatic tachycardia were not great, but did increase the blood pressure and slow the pulse rate after operation in cases in which these phenomena occurred, suggests that the defect responsible for this condition lies, at least in part, within the abdomen. Cuffs tightly applied above both knees in order to cut off the circulation to the legs tended to elevate the blood pressure and slow the pulse rate. This effect was greater after, than before, sympathectomy and was greatest after operation among patients with the greatest degrees of orthostatic hypotension and tachycardia. The combined use of an abdominal binder and thigh cuffs had a greater blood

pressure raising and pulse slowing effect than either procedure alone. The effect of the tight abdominal binder, thigh cuffs, or both, in counteracting orthostatic hypotension and tachycardia was due chiefly to factors other than the discomfort which was induced by these agents. Exercise of the legs did not produce a conclusive effect on orthostatic blood pressure and orthostatic pulse rate. Paredrinol sulfate raised the level of the postoperative blood pressure in the horizontal and erect postures and alleviated most of the symptoms which otherwise resulted when patients were in the erect posture. It reduced the amount of orthostatic decrease in blood pressure. It may be helpful in counteracting excessive degrees of orthostatic hypotension when patients begin to walk soon after sympathectomy.

American J. Digestive Diseases, Fort Wayne, Ind.

11:63-100 (March) 1944

Treatment of Acute Gingivostomatitis (Vincent). L. Pelner.—p. 63.
Significance of Enlarged Lymph Nodes. L. F. Craver.—p. 65.
Explanation of Appetite. F. Hoelzc.—p. 71.
Cantor Sigmoidoscope. A. J. Cantor.—p. 76.
Early Recognition of War Nutrition Deficiency in Children. I. N. Kugelmass.—p. 83.

American J. Obstetrics and Gynecology, St. Louis

47:297-444 (March) 1944. **Partial Index**

Experience with 100 Cases of Continuous Caudal Analgesia. C. O. McCormick, C. P. Huber, J. F. Spahr and C. F. Gillespie.—p. 297.
*Some Observations in Use of Continuous Caudal Analgesia. C. B. Lull.—p. 312.
Residual Effect of Prolonged Caudal Anesthesia on Neuromuscular System in Dogs. K. Kellogg and V. Parrett.—p. 327.
Further Studies with Continuous Drip Caudal Anesthesia. N. Block.—p. 331.
*Paravertebral Sympathetic Nerve Block, Method for Safe and Painless Conduct of Labor. S. M. Jarvis.—p. 335.
*Information Regarding Time of Human Ovulation Derived from Study of 3 Unfertilized and 11 Fertilized Ova. J. Rock and A. T. Hertig.—p. 343.
Relationship of Congenital Syphilis to Abortion and Miscarriage, and Mechanism of Intrauterine Protection. A. L. Dippel.—p. 369.
Myometrial Hypertrophy (So-Called Fibrosis Uteri). J. T. Williams and T. D. Kinney.—p. 380.
Oral Administration of Pyridoxine Hydrochloride in Treatment of Nausea and Vomiting of Pregnancy. B. B. Weinstein, Z. Wohl, G. J. Mitchell and G. F. Sustendal.—p. 389.
Scalenus Anticus Syndrome as Complication After Gynecologic Operations. W. T. Pommerenke and W. A. Risteen.—p. 395.
Peripheral Circulatory Collapse in Toxemia of Pregnancy. S. S. Lambeth.—p. 402.
Rate of Transport of Spermia in Human Uterus and Tubes. R. L. Brown.—p. 407.
Acardius Amorphus. M. D. Kappelman.—p. 412.
Diphtheria of Uterine Cervix. W. D. Beacham and M. Rice.—p. 417.
Pelvic Abscess Following Artificial Insemination. W. Bickers.—p. 425.

Continuous Caudal Analgesia.—Lull reports observations on 927 patients delivered under continuous caudal analgesia. Selection of the patient is a most important consideration. Contraindications to the method are (1) gross deformities of the spine, particularly of the sacrum, (2) tumors which narrow the spinal canal, (3) local infection around the sacral hiatus, (4) skin infections such as boils or carbuncles anywhere on the body, (5) a history of sensitivity to the analgesic agent, (6) profound anemia, unless supplemented with oxygen inhalation, (7) in placenta previa because of the relaxation of the cervix and the possibility of bleeding, (8) floating head, (9) syphilis with probable central nervous system lesion, (10) obese persons, (11) dwarfs and midgets, because of low lying dura, (12) pilonidal cysts. Cardiac disease, upper respiratory infections and premature labor are ideal indications for the use of caudal anesthesia. It has been used with excellent results also in preeclampsia and in 1 or 2 cases of eclampsia. About 62 per cent of women are suitable for this type of anesthesia. The method is safe for mother and baby if the patient is surrounded by proper safeguards and is competently supervised from the standpoint of both anesthesia and obstetrics. Equally important beneficial factors besides the relief of pain, are the excellent condition of the baby at the time of birth, the delighted mental attitude of the mother, the minimal blood loss, the easy termination of the third stage of labor, and the return of the patient to her room in good physical condition showing no signs of exhaustion or fatigue. The method is one of the greatest advances in obstetric practice.

Paravertebral Sympathetic Nerve Block for Painless Labor.—Schumacker, Hellman and Manahan reported in 1943 a series of cases of labor in which pain was controlled by a single paravertebral sympathetic nerve block. They were not impressed with its value. Jarvis thought that temporary suppression of painful stimuli transmitted by way of the paravertebral sympathetic chain could be repeated whenever and as often as necessary. Pain stimuli from the uterus travel by way of the sympathetic system and enter the cord at the last of the thoracic rami communicantes. The pain of labor can be relieved by blocking the sympathetic chains in the lumbar area of the back. Jarvis used his method in 70 cases of labor. Pains were relieved by single or multiple paravertebral sympathetic blocks and perineal pudendal blocks. The method is safe, simple and without sequelae. It can be carried out without elaborate equipment or extensive technical training. It seems to speed the dilatation of the cervix without the many tiny lacerations so frequently seen. Spontaneous delivery is the rule.

Time of Human Ovulation.—Rock and Hertig evaluate the data associated with 11 fertilized and 3 unfertilized human ova. The 11 embryos were found in the extirpated uteri of surgical patients. One of the unfertilized eggs was isolated from a ripe follicle; the second and third were unfertilized ova washed out of tubes. In the cases of the 3 unfertilized eggs, the lengths of the preovulatory and postovulatory phases have been calculated, utilizing the histology of the endometrium and of the ripe follicle or early corpus luteum, in conjunction with the menstrual history and to some extent the cytology of the ovum itself. It was found in the 2 cases of tubal eggs that, while the preovulatory phases varied by one to three days (ninth to tenth, and eleventh to twelfth days of the cycle respectively), the corresponding computed postovulatory phases were identical: fifteen to fourteen days. In the case of a ripe follicular egg, ovulation was estimated as due between the eleventh and twelfth days of the cycle; the postovulatory phase would then have been somewhat more than fourteen to thirteen days long. In 11 cases of fertilized ova the lengths of the preovulatory and postovulatory phases were likewise calculated; here, in addition to the histology of the endometrium and the related catamenial data, the mean estimated age of the embryo was utilized. In 8 of the 11 cases the estimated postovulatory phase fell within the limits of sixteen to twelve (14 ± 2) days. In 2 of the 3 exceptions the variation from the outermost limits of the theoretical range was half a day, while in the third exception the deviation was one day. When ovulation in these 11 cases was expressed as occurring in a certain percentile of the respective menstrual cycle with reference to the next expected period, the average postovulatory phase was found to occupy 47.2 per cent of the cycle. On substituting for the experimentally derived estimated length of the postovulatory phase the theoretical figure fourteen in each case, the average value for these fourteen postovulatory days was 45.2 per cent of the cycle. The correlation of these two values, 47.2 per cent and 45.2 per cent, expresses the proximity of probable ovulation time in these cases to the fourteenth day before menstruation. These averages differ by only 2 per cent of the cycle length, which in the 11 cases averaged 30.2 days. This difference is only 0.6 day, which is much less than the commonly accepted deviation of ± 2 days from the theoretical mean length of the postovulatory phase, fourteen days. The data indicate that ovulation takes place about fourteen days before the first day of the next expected period.

American Journal of Tropical Medicine, Baltimore

24:1-54 (Jan.) 1944

Broader Perspective for Bacteriology: Presidential Address. N. P. Hudson.—p. 1.
Diarrheal Diseases: Eighth Charles Franklin Craig Lecture. G. R. Callender.—p. 7.
Meningitis on Isthmus of Panama. B. H. Kean and W. D. Crandall.—p. 17.
Observations on Relative Attractiveness of Man and Horse for Anopheles Albimanus Weideman. A. A. Weathersbee.—p. 25.
Iodochlorhydroxyquinoline and Diiodohydroxyquinoline: Animal Toxicity and Absorption in Man. N. A. David, N. M. Phatak and F. B. Zener.—p. 29.
Adaptation of Cane Rat (Zygodontomys) to Laboratory and Its Susceptibility to Virus of Yellow Fever. M. Bates and J. M. Weir.—p. 35.
Comparative Morphology of Trichomonad Flagellates of Man. D. H. Wenrich.—p. 39.

American Review of Soviet Medicine, New York

1:197-288 (Feb.) 1944

Treatment of War Fractures of Femur. S. S. Yudin.—p. 197.
Reconstruction of Esophagus. E. E. Yurasov.—p. 206.
Tongue Wounds. N. M. Michaelson.—p. 216.
*Quinoline Compounds with Side Chain in Position 4. E. P. Galperin. —p. 220.
Treatment of Malaria in Zone of Operations. M. I. Kirzon.—p. 226.
Early Diagnosis of Typhus Fever Through Detection of Specific Antigen in Blood. A. A. Smorodintsev and A. I. Drobyshevskaya. —p. 229.
Symptoms and Clinical Course of Paratyphoid Fever A. N. F. Andrets and G. M. Baumstein.—p. 233.
Phytoncides or Plant Bactericides: Effect of Phytoncides on Protozoa. B. Tokin.—p. 237.
Action of Phytoncides on Infusoria. A. Kovalenok.—p. 239.
Effect of Phytoncides on Rabbits. I. Toroptsev.—p. 242.
Use of Phytoncides in Treatment of Infected Wounds. I. V. Toroptsev and A. G. Filatova.—p. 244.
Pulmonary Hemodynamic Reflexes. V. V. Parin.—p. 251.

Quinoline Compounds for Malaria.—Among antimalarial compounds synthesized in the Soviet Union a number of preparations have a diethylaminoalkylamine chain joined to the quinoline in position 8. The majority of these compounds proved active against malaria. In synthesizing chemical isomers with an identical chain joined in position 4 instead of 8, several possibilities arise: the preservation of antimalarial properties are affected analogous to quinine in acting specifically on the asexual forms of the parasite (schizotropic action) and the question of whether their action is directed against the sexual forms (gametotropic action) as observed with the majority of compounds with the side chain in position 8. The author found that four quinoline compounds with a diethylaminoalkyl chain joined to a 6-methoxyquinoline nucleus by an amino group in position 4 exert a schizotropic effect on avian malaria. The position of the diethylaminoalkylamine joined to the 6-methoxyquinoline determined the biologic action of the preparation; in position 8 the preparation has both schizotropic and gametotropic properties, and in position 4 schizotropic action only. Preparations of this group are of interest as possible quinine substitutes.

Annals of Allergy, Minneapolis

2:1-84 (Jan.-Feb.) 1944

Art of Interpreting Pulse-Diet Record in Familial Nonreaginic Food Allergy. A. F. Coca.—p. 1.
Practical Considerations of Dermatophytoses as Seen by Allergist. P. Schonwald.—p. 10.
Syringe Control in Passive Transfer Reactions. F. A. Simon.—p. 15.
Evaluation of Skin Testing in Allergy: Discussion of Causative Factors in Misleading Reactions. J. M. Steele.—p. 17.
Cashew Nut Oil Dermatitis. S. D. Lockey.—p. 22.
Index of Proprietary Drugs and Mixtures Commercially Available for Symptomatic and Adjuvant Treatment of Bronchial Asthma. E. A. Brown.—p. 29.
Annual Review of Recent Literature on Hay Fever. Helen C. Hayden. —p. 41.
Annual Critical Survey of Recent Literature on Bronchial Asthma. L. Unger.—p. 49.

Archives of Ophthalmology, Chicago

31:191-278 (March) 1944

Traumatic Liporrhagia Retinalis (Verhoeff): Purtscher's Disease. E. B. Spaeth.—p. 191.
*Pathologic Changes in Eye Associated with Subacute Bacterial Endocarditis: Report of 5 Cases with Autopsy. Eva C. Dienst and S. Gartner.—p. 198.
Transscleral Removal of Intraocular Foreign Body with Aid of Berman Locator. H. Minsky.—p. 207.
Emergency Room Service at Wills Hospital. R. E. Shoemaker.—p. 211.
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Practical Ophthalmic Test Which Furnishes Quantitative Data: Modification of Massachusetts Vision Test. A. E. Sloane and J. R. Gallagher.—p. 217.
Ocular Malingering. H. Agatston.—p. 223.
Prolapse of Uvea: Treatment and Significance in Interpretation of Sympathetic Ophthalmia and Glaucoma. R. Denig.—p. 232.
Iridotorsion: Iredectomy; Cyclectomy. R. Denig.—p. 242.
*Meningococcic Conjunctivitis. F. H. Theodore and P. F. Kost. —p. 245.
Rhinocanalicular Anastomosis with Reconstruction of Lacrimal Sac. L. Blumenfeld.—p. 248.
Cataract Produced by Anoxia. J. Bellows and Dorothy Nelson. —p. 250.
Pseudoaphakia Fibrosa: Report of Case. J. W. Harned.—p. 253.

Eye Changes in Bacterial Endocarditis.—According to Dienst and Gartner, subacute bacterial endocarditis is often brought to the attention of the ophthalmologist because of the striking fundic picture. They had the opportunity of obtaining at necropsy the eyes of 5 patients who died of this disease. The ocular lesions were of special interest as they were visible to a considerable extent during life and often suggested the diagnosis early. Frequent lesions are conjunctival petechiae, papillitis, Roth spots and other types of retinal exudates and hemorrhages, some of which have white centers. Examination with the slit lamp may show small floating cells in the anterior chamber and fine keratitic precipitates. The pathologic process is characterized by cellular infiltration and edema, particularly about the blood vessels in the retina and the optic nerve, and extensive infiltrations in the choroid. Papillitis is a striking feature.

Meningococcic Conjunctivitis.—Theodore and Kost call attention to the frequency of meningococcic conjunctivitis during periods in which the incidence of meningococcemia and of meningococcic meningitis is high and emphasize the importance of routine bacteriologic examination of the conjunctival discharge in all cases of acute catarrhal conjunctivitis, particularly at such times. Apparently the conjunctiva is a common site of extrameningeal involvement. In 8 cases of meningococcic conjunctivitis the diagnosis was made only as a result of the routine examination of smears of secretion in all cases of acute catarrhal conjunctivitis encountered. The importance of the recognition of this type of conjunctivitis is twofold: it may be the first stage of meningococcic meningitis and, even if the process remains localized to the eyes and is cured by nonspecific, routine measures, the patient may become a carrier of the organisms.

Archives of Otolaryngology, Chicago

39:201-286 (March) 1944

Intravenously Induced Anesthesia for Operations on Larynx Under Direct Laryngoscopy. R. C. Adams, G. B. New, J. S. Lundy and T. H. Seldon.—p. 201.
Cochlear Microphonics: Critical Review. P. Kellaway.—p. 203.
*Subdural Empyema Secondary to Purulent Frontal Sinusitis: Clinicopathologic Study of 42 Cases Verified at Autopsy. C. B. Courville. —p. 211.
Adenoma of Trachea and Bronchus. L. Schwartz.—p. 231.
Intracranial Metastasis of Carcinoma of Lung. W. S. Tinney and H. J. Moersch.—p. 243.
Hearing Aids. W. Hughson and Eva Thompson.—p. 245.
Vascular Polyp of Vocal Cord. M. C. Myerson.—p. 250.
*Acute Tonsillitis: Treatment by Rectal Administration of New Bismuth Compound. J. S. Stovin.—p. 259.
Functional Examination of Hearing. A. Lewy and S. L. Shapiro. —p. 264.

Subdural Empyema Secondary to Purulent Frontal Sinusitis.—Subdural abscess secondary to suppurative frontal sinusitis is a well defined clinicopathologic entity. Courville reports a series of 42 instances of subdural abscess or empyema consequent to acute suppurative infection of the frontal sinus which were verified at necropsy. Cases verified at operation in which cure occurred or death without necropsy have been omitted, since all the pathologic details were not available for study. Only by this selection was the complete and uninterrupted clinical course of the disease available for survey. This entity is the most common yet least understood intracranial complication of suppurative frontal sinusitis. It provokes a fairly typical clinical syndrome when the pus accumulates in sufficient quantities over the cerebral hemisphere. Usually the result of acute suppurative frontal sinusitis ("empyema"), often limited to one side, subdural abscess most commonly develops from a blood-borne infection which reaches the subdural space via the superior longitudinal sinus and its venous communications. As in the case of its precursor lesion, subdural abscess is usually an acute and rapidly progressive lesion. It is lethal in the great majority of cases. The pus, when unobstructed, accumulates rapidly and spreads in the subdural space, giving rise to contralateral motor symptoms and signs associated with motor aphasia if the major hemisphere is the one affected. When the infection is less fulminating, pachymeningitis interna results with ultimate fusion of the dura, arachnoid, pia and cerebral cortex and the consequent formation of localized, heavily encapsulated subdural and intracerebral abscesses which pursue a prolonged clinical course. When it is realized that subdural empyema with origin in the frontal sinus is about four times as frequent as the better known and more commonly suspected

abscess of the frontal lobe, the occurrence of one-sided motor phenomena will more often lead to trepanation of the skull and exploration of the subdural space, and some lives will be saved which otherwise would be lost.

Bismuth Compounds in Acute Tonsillitis.—Stovin reports a new bismuth compound, a salt of heptadienecarboxylic acid, which is readily absorbed when placed in the rectum in the form of a suppository. He administered this bismuth compound suppository in 40 cases. Administration of the bismuth salt of heptadienecarboxylic acid in suppository form can be recommended for acute tonsillitis. It has also proved efficacious in a large group of patients in whom tonsillar tabs and granulation tissues persisting after tonsillectomy had become secondarily infected. It rapidly relieves the general symptoms and sore throat, usually within twenty-four to forty-eight hours. The follicular exudate and cervical adenopathy subside somewhat more slowly. The use of more than two suppositories is rarely indicated. No toxic manifestations of the drug have been noted.

Archives of Pathology, Chicago

37:161-226 (March) 1944

Fluorescent Material (Ceroid) in Experimental Nutritional Cirrhosis. H. Popper, P. György and H. Goldblatt.—p. 161.
Calcified Epithelioma. B. Highman and G. E. Ogden.—p. 169.
Lymphadenitis of Secondary Syphilis: Its Resemblance to Giant Follicular Lymphadenopathy N. Evans.—p. 175.
Spindle and Giant Cell Sarcoma Arising from Unidentified Precordial Bodies. D. Symmers.—p. 180.
*Incidence of Primary Carcinoma of Lung, with Special Reference to Its Increase. P. E. Steiner.—p. 185.
Infectious Mononucleosis: Report of Fatal Case with Autopsy. E. E. Ziegler.—p. 196.
Effect of Long-Continued Administration of Estrogen on Sex Organs of Mice Which Have Passed Reproductive Period. R. J. Crossen and L. Loeb.—p. 202.

Incidence of Primary Carcinoma of Lung.—Steiner reports that, in the forty years from 1902 to 1941 inclusive, primary carcinoma of the lung was noted in 126 of 5,515 necropsies performed at the University of Chicago. The incidence was 2.3 per cent of all necropsies, 7.6 per cent of all malignant tumors and 10.3 per cent of all tumors diagnosed as carcinoma. It was fifth in frequency among all types of tumor and third among types of carcinoma. The incidence of carcinoma of the lung expressed in terms of percentage of all tumors showed a slight increase in males but not in females. The increase was less than that shown for two types of tumors used as controls, namely carcinoma of the colon and intracranial tumors, but greater than that for two other control types, carcinoma of the pancreas and carcinoma of the stomach. Corrections were made for changes in the annual number of necropsies, in the sex ratio of all necropsies, in the percentage of neoplasms in all necropsies and in the average age of the necropsy population. The only known variable not subjected to correction, a change in the nature of patients admitted to the hospitals, could easily account for the slight increase in carcinoma of the lung. It is believed that there has been a slight apparent but no real increase in primary carcinoma of the lung.

Bulletin of Johns Hopkins Hospital, Baltimore

74:85-160 (Feb.) 1944

*Effect of Prolonged and Intermittent Sulfonamide Feeding on Basal Metabolic Rate, Thyroid and Pituitary. Julia B. Mackenzie and C. G. Mackenzie.—p. 85.
Pathology of Staphylococcus Abscess in Vitamin C Deficient Guinea Pigs. E. Meyer and Mary B. Meyer.—p. 98.
Preliminary Report on Method for Lengthening Effect of Sympathetic Nerve Block. F. C. Lee, D. I. Macht and R. Z. Pierpont.—p. 119.
Nutritional Requirements in Inanition: I. Observations on Ability of Single Foodstuffs to Prolong Survival. L. E. Holt Jr. and Charlotte N. Kajdi.—p. 121.
Id.: II. Effect of Mineral and Vitamin Supplements on Survival of Animals on Single Foods. L. E. Holt Jr. and Charlotte N. Kajdi.—p. 142.

Effect of Sulfonamide Feeding on Basal Metabolism, Thyroid and Pituitary.—The Mackenzies report the effects of protracted and repeated administration of sulfaguanidine on the thyroid and pituitary glands and on the basal metabolic rate. The administration of sulfaguanidine to young adult rats produced a sharp drop in the basal metabolic rate and a simultaneous hyperplasia and enlargement of the thyroid. Prolonged drug feeding, from the time of weaning, reduced the basal metabolic rate to thyroidectomy levels. Microscopically the thyroids varied from the normal to a condition of extreme hyperplasia. The average colloid content of the follicles was reduced by 75 per cent. Thyroid enlargement in the female exceeded that in the male. Nests of thyroidectomy cells were present in the pituitary. The withdrawal of the drug from these animals resulted in a return of the basal metabolic rate, and of the thyroid and pituitary microscopic appearance to normal. The thyroid glands were still enlarged at 4 weeks. Intermittent sulfaguanidine feeding to immature and to adult rats produced neither a refractory nor a hypersensitive state with respect to thyroid stimulation. The gland became hyperplastic during each feeding period and regressed during each withdrawal period.

California and Western Medicine, San Francisco

60:89-128 (March) 1944

Progress of Surgery. O. Ivanissevich.—p. 93.
South Sea Malaria in California. G. Cheney.—p. 94.
Fractures of Tibial Condyles. W. L. Weber.—p. 96.
Thrombocytopenic Purpura: Case Caused by Sulfadiazine. A. H. Meyer.—p. 98.
How Mortality Among Wounded in Red Army Is Reduced. S. J. Movitt.—p. 99.
High Enema: Mining Camp Experience. W. C. Shipley.—p. 99.

Canadian Medical Association Journal, Montreal

50:199-296 (March) 1944

Acute Nitroglycerin Poisoning. I. M. Rabinowitch.—p. 199.
Human Behavior and Its Relation to Industry. H. G. Ross.—p. 202.
Dietary Study of Toronto School Teachers. J. H. Ebbs, F. F. Tisdall and Marjorie L. Scott.—p. 208.
Observations of Motion at Shoulder Joint. G. H. Fisk.—p. 213.
Conservative Surgical Treatment of Chronic Inversion of Uterus. W. P. Tew.—p. 216.
*Studies on Rh Factor and Its Significance in Obstetric Practice. G. J. E. van Dorsser, Amelia W. Morrison and N. W. Philpott.—p. 219.
Rheumatoid Arthritis. D. Robinson.—p. 223.
Hereditary Acholuric Jaundice in Rat. C. K. Gunn.—p. 230.
Antisyphilitic Therapy with Clorarsen with Evaluation of Tolerance. F. Kalz, L. P. Ereaux, Hope Prichard and Barbara Dean.—p. 237.
Estrogens for Prevention of Postpartum Breast Engorgement (Comparative Study). B. E. Meek and W. H. Murby.—p. 241.
New Knowledge of Tuberculosis. A. F. Miller.—p. 243.
Varicose Veins in Soldier. C. W. Clark.—p. 247.
Sulfathiazole in Glycerin. E. H. Wood.—p. 251.

Rh Factor in Obstetric Practice.—Van Dorsser and his associates present a study of 474 consecutive women entering the Royal Victoria Montreal Maternity Hospital for childbirth. They were examined in respect of the Rh factor, the A, B and O groups, and their previous obstetric histories. The same blood determinations were made in the case of the husbands and children whenever possible. Standard serums supplied by the Certified Blood Donor Service in New York were used for determination of the blood groups and the Rh factor. Whenever the mother and child were of different blood groups, except in the case of a group O child, and when the mother was Rh negative and the child Rh positive, appropriate titrations were done with the mother's serum against child or husband or both and against other known persons. The percentage distribution of the Rh factor in this series compares favorably with the figures established by other workers. Of the total pregnancies in the two groups of women there is a much higher percentage of abortions, miscarriages and fetal deaths among the Rh negative women than in the Rh positive group, 21 per cent as compared with 13 per cent. But the percentage of Rh negative and Rh positive women having no obstetric mishaps are approximately equal. In those women having one or more mishaps the percentage of complications in the total pregnancies is higher in the Rh negative group. There is no difference in the incidence of toxemia in Rh negative and Rh positive women in the present series. All the women mentioned as having abortions or miscarriages had these in previous pregnancies. If cases of abortions and miscarriages had been included in this series the figures derived would probably have been somewhat different. It is evident that an Rh negative woman is not, in her first two or three pregnancies at least, particularly more apt to lose her child either before or during birth or in the neonatal period than an Rh positive woman. In the case of repeated pregnancies there is a significantly higher incidence of fetal mor-

tality among the Rh negative women. In this series there were only 4 erythroblastotic children, 1 of which was not associated with the Rh factor but was apparently the result of isoimmunization of an A_2 mother against A_1 cells inherited by the fetus from the father.

Connecticut State Medical Journal, Hartford

8:139-204 (March) 1944

Problem of Nutrition in Presence of Excessive Nitrogen Requirement in Seriously Ill Patients, with Particular Reference to Thermal Burns. F. H. L. Taylor, C. S. Davidson and S. M. Levenson. —p. 141.
New Trends and Results in Surgical Therapy of Pulmonary Suppuration. G. E. Lindskog.—p. 148.
Medical Service in Army Air Forces. H. A. Rusk.—p. 151.
Industrial Pulmonary Problems.—C. B. Gibson.—p. 154.
Notes on Congenital Auriculoventricular Dissociation: Report of Case of Congenital Complete Heart Block. H. A. Wenner.—p. 160.
Reported Prevalence of Syphilis and Gonorrhea in Connecticut. H. P. Talbot.—p. 164.
A Biologist Considers Social Security. H. S. Burr.—p. 165.

Diseases of Chest, Chicago

10:87-170 (March-April) 1944

*Indications for Total Pneumonectomy. E. A. Graham.—p. 87.
Collapse Therapy in Bilateral Pulmonary Tuberculosis. J. B. Andosca and J. A. Foley.—p. 95.
*Collapsed Lung—Postmortem Findings. R. Charr and J. W. Savacool. —p. 103.
Clinical Problems in Bronchiectasis. H. C. Hinshaw and H. W. Schmidt.—p. 115.
Role of Bronchial Tree in Pathogenesis of Pulmonary Tuberculosis. B. L. Brock.—p. 123.
Rationale of Therapeutic Administration of Massive Doses of Vitamin A in Tuberculous Diabetics. A. L. Banyai and A. V. Cadden. —p. 133.
Tuberculous Meningitis Complicating Thoracic Surgery. E. W. Custer. —p. 145.
Tuberculosis in Canada. G. C. Anglin.—p. 149.
Tuberculosis Control in Hawaii. D. R. Chisholm.—p. 151.

Indications for Total Pneumonectomy.—According to Graham, bronchiogenic carcinoma constitutes the chief indication for total pneumonectomy. The operation is performed also for chronic suppurative processes involving most if not all of one lung, and certain selected cases of pulmonary tuberculosis. The author's material consists of 104 cases of total pneumonectomy. There were 81 operations for neoplasm and 23 operations for other conditions performed in a period of ten and one-half years. Since Jan. 1, 1939 he has performed 75 total pneumonectomies, of which 70 were for malignant neoplasm. In this group there were 21 hospital deaths, a mortality of 30 per cent. In the last 25 cases for neoplasm there have been only 3 deaths, or a mortality of 12 per cent. Total pneumonectomy involves no impairment of function or usefulness for the ordinary person of middle age. The author now has 5 patients who are well more than five years after their operation and 1 for more than four years. Three of these patients had squamous cell carcinomas and the other 3 had carcinomas of other types.

Collapsed Lung.—Pulmonary changes in collapse therapy were studied by Charr and Savacool at necropsy in 30 cases of unilateral pneumothorax, 4 of bilateral pneumothorax, 10 of phrenic nerve paralysis and 5 of thoracoplasty. In the majority of the 49 cases the collapse of the lungs was 50 per cent or more at necropsy. Pleural inflammation with or without effusion was a constant finding, and it was usually related to the tuberculous lesions in the underlying lung. Tuberculous empyema occurred from rupture of adhesions or of subpleural tubercles rather than from faulty operative technic. Selective collapse was caused apparently by atelectasis resulting from occlusion of diseased bronchioles in the tuberculous areas. Dilatation of giant or ball valve cavities depended on tuberculous changes in the draining bronchi which permitted air to enter but prevented it from leaving the cavities. Panarteritis was a constant finding and resulted in loss of blood supply about the chronic fibrotic cavities. This seemed responsible for failure of such cavities to heal even under satisfactory collapse. Vascular changes around recent cavities were minimal, and the blood supply was therefore practically unimpaired. This contributed to the healing of such cavities by concentric collapse and fibrosis. Phrenic nerve paralysis caused extensive fibrosis of the paralyzed portion of the diaphragm and brought about relatively greater rise of the central and posterior portions of the diaphragm than of the anterior portion. Consequently the posterior and central cavities were more influenced by phrenic paralysis than the anterior ones. Collapse therapy in chronic pulmonary tuberculosis should be carried out before vascular and fibrotic changes are too great to permit concentric cavity closure and anatomic healing.

Illinois Medical Journal, Chicago

85:105-160 (March) 1944

Cardiovascular Round Table. F. D. Murphy, H. H. Cole and E. M. Stevenson.—p. 119.
Industrial Ophthalmology and Otolaryngology. G. F. Harkness.—p. 124.
Wartime Consideration of Syphilis. P. A. O'Leary.—p. 132.
Problem of Tropical Diseases. A. Egdahl.—p. 137.
*Fusospirochetal Tracheobronchitis. P. H. Holinger and R. G. Rigby. —p. 141.
Acute and Chronic Hepatitis (Cirrhosis). W. L. Palmer.—p. 143.

Fusospirochetal Tracheobronchitis.—Holinger and Rigby point out that fusospirochetal infection may appear in the nature of a chronic tracheobronchitis without gross anatomic changes in the bronchopulmonary system. Sixty-nine patients with chronic pulmonary infections in whom the etiologic organisms appeared to be the fusospirochetal group are the basis for this study. The duration of symptoms was three months to twelve years, with cough, loss of weight, a low grade fever, fatigue and occasional hemoptysis as the most common symptoms. Night sweats were mentioned by most of the patients. The group presents relatively few physical findings since the more extensive, destructive types of lesions are eliminated from this series. The bronchoscopic findings in this series were those of a chronic bronchitis. The bronchial mucosa assumed the same color and general character of the mucosa of the mouth of a patient with gingivitis. The diagnosis was established by an evaluation of the history, physical and bronchoscopic findings, and the bacteriologic study of the secretions. The large numbers of fusospirochetal organisms found normally in the mouth are evidence that these organisms, under normal conditions, are saprophytes. Under certain conditions they may become pathogenic. This is especially true if a pyogenic organism is found in association with the fusospirochetes. In almost all the reviewed cases Streptococcus viridans colonies were found in the material cultured from the bronchoscopically obtained secretions. The principal therapeutic agents in the treatment of fusospirochetal infections are the arsenicals. Neoarsphenamine, sodium cacodylate and mapharsen are all specific. Large doses of vitamin C and autogenous vaccines are also helpful. Postural drainage is advisable for patients who have a productive cough, and bronchoscopic aspiration if evidence of bronchial obstruction is present.

Indiana State Medical Assn. Journal, Indianapolis

37:169-224 (April) 1944

Cancer Prevention. D. D. Bowers.—p. 169.
Use of Hormones in Diseases of Women. E. P. McCullagh.—p. 172.
Pancreatic Cysts: Report of 2 Unusual Cases. E. S. Jones.—p. 175.
Some Unusual Manifestations of Nasal Allergy. K. L. Craft.—p. 180.
Intradermal Vaccine in Treatment of Acute Brucellosis. D. L. Urschel. —p. 184.
Ocular Problems of War Workers. C. H. Ade.—p. 186.
Botulism May Occur Again in Indiana. J. W. Jackson.—p. 190.

Iowa State Medical Society Journal, Des Moines

34:93-132 (March) 1944

Practical Management of Headache. A. W. Proetz.—p. 98.
Palindromic Rheumatism. W. D. Paul and W. P. Logan.—p. 101.
Social and Medical Aspects of Iowa Training School for Boys at Eldora. R. E. Gray.—p. 102.
Bilateral Intracranial Aneurysms with Subarachnoid Hemorrhage. H. E. Thompson.—p. 105.

34:133-182 (April) 1944

Periarthritis of Shoulder Joint. A. Steindler.—p. 134.
Errors in Diagnosis of Intestinal Obstruction. R. N. Bartels and K. S. Harris.—p. 138.
Physiologic Factors Involved in Atrophy and Regeneration of Skeletal Muscle. H. M. Hines and W. H. Wehrmacher.—p. 142.
Achalasia of the Esophagus. R. F. Niehaus.—p. 145.
Scurvy in Early Infancy. J. H. Laubescher.—p. 148.
Anatomic Basis of Diagnosis and Treatment of Common Hand Lesions. E. W. Scheldrup.—p. 151.

Journal of Clin. Endocrinology, Springfield, Ill.

4:1-46 (Jan.) 1944

*Action of Thiouracil on Thyroid Gland in Graves' Disease. R. W. Rawson, R. D. Evans, J. H. Means, W. C. Peacock, J. Lerman and R. E. Cortell.—p. 1.
Report of 2 Cases of Myxedema with Extreme Hypercholesteremia, 1 Complincated by Xanthoma Tuberosum. Leela Stevens Craig, H. Lisser and M. H. Soley.—p. 12.
Effect of Estrogenic Hormone on Hyperthyroidism. A. A. Farbman. —p. 17.
Effect of Testosterone Propionate in Patient with Diabetes Mellitus and Addison's Disease. C. D. Armstrong.—p. 23.
Heart Failure in Addison's Disease with Myocardial Changes of Potassium Deficiency. I. I. Goodof and C. M. MacBryde.—p. 30.

Thiouracil in Toxic Diffuse Goiter.—Rawson and his collaborators studied the effects of thiouracil on 19 patients with toxic diffuse goiter. They observed a lowering of the basal metabolic rate following a curve similar to that resulting from iodine administration. Relief of symptoms was similar to that resulting from iodine administration. Increase of hyperplasia of the thyroid with loss of colloid and increase in vascularity occurred. In some instances increased lymphoid hyperplasia resulted. There was decreased avidity for iodine by the thyroid gland, as shown by greatly impaired collection of radioactive (tracer) inorganic iodine, with increased elimination in the urine. There was also impairment in the physiologic activity of the thyroids of persons treated with the drug as tested on patients with myxedema. It is believed that these facts are consistent with the theory that thiouracil acts by preventing (or blocking) the utilization of iodine in the synthesis of thyroid hormone within the thyroid gland. Under the influence of thiouracil no new active thyroid hormone is produced. The authors believe that cessation of active thyroid hormone production stimulates the thyrotropic activity of the pituitary and this in turn causes further hyperplasia of the thyroid, which, however, does not overcome the thiouracil block to active thyroid hormone production.

Journal of Experimental Medicine, New York

79:235-330 (March) 1944

*Heredity of the Rh Blood Types. A. S. Wiener, E. B. Sonn and Ruth B. Belkin.—p. 235.
Evaluation of Methods for Concentration and Purification of Influenza Virus. W. M. Stanley.—p. 255.
Size of Influenza Virus. W. M. Stanley.—p. 267.
Stability of Influenza Virus in Presence of Salts. C. A. Knight. —p. 235.
Effect of Chemicals on Purified Influenza Virus. C. A. Knight and W. M. Stanley.—p. 291.
Centrifugation and Ultrafiltration Studies on Allantoic Fluid Preparations of Influenza Virus. W. F. Friedenwald and E. G. Pickels. —p. 301.
Role of Mucoid Polysaccharide (Hyaluronic Acid) in Virulence of Group A Hemolytic Streptococci. E. H. Kass and C. V. Seastone. —p. 319.

Heredity of the Rh Blood Types.—Wiener and his associates state that, with the aid of three varieties of anti Rh agglutinins, five Rh agglutinogens can be demonstrated, which in combination determine eight types of human blood. To account for the existence of these variants of the Rh agglutinogen, one of the authors has proposed a theory of six allelic genes. The authors present data concerning the Rh blood types in 97 families with 275 children and in 135 mother-child combinations. The results obtained are in complete agreement with the theory of six allelic genes. When the theory is tested by applying the chi square and gene frequency methods to data on the distribution of the Rh types in the population, the agreement is also satisfactory. The Rh blood types explain the hitherto puzzling differences in the human Rh antiserums. For routine diagnostic work the standard anti Rh serums giving 85 per cent positive reactions are to be preferred, because such serums react with about equal intensity with bloods of types Rh_1 and Rh_2. With such serums the bloods of persons belonging to the rare types Rh′ and Rh″ would not react, which is an advantage because it has been found that individuals of type Rh′ and probably also Rh″ can be sensitized to the Rh factor. For classifying blood donors the standard anti Rh serums are not quite as satisfactory, because an Rh negative individual sensitized to the factor Rh_1, for example, might have a hemolytic reaction if given type Rh′ blood. The determination of the Rh type of the father of an erythroblastotic baby will often make possible a more definite statement as to the prognosis of future pregnancies. The medicolegal application of the Rh tests in cases of disputed parentage appears justified. The striking differences in distribution of the Rh blood types in different races may find practical application in anthropology. To the geneticist the Rh blood types are of interest because they furnish another striking example of mendelian inheritance in man, and these properties serve to mark another pair of chromosomes for linkage studies.

Journal of Immunology, Baltimore

48:155-212 (March) 1944

Experimental Staphylococcal Infection and Passive Protection. L. A. Julianelle.—p. 155.
Studies on Complement Fixation with Viruses of Influenza. W. Henle, Gertrude Henle, V. Groupé, and L. A. Chambers.—p. 163.
Quantitative Study of Passive Anaphylaxis in the Guinea Pig: II. E. A. Kabat and M. H. Boldt.—p. 181.
Observations on Immunity in Streptococcal Lymphadenitis of the Guinea Pig. E. J. Foley.—p. 185.
Relation of Viral Concentration to the Infectivity for Chick Embryos of Influenza Virus B (Lee Strain). A. R. Taylor, D. G. Sharp, I. W. McLean Jr., Dorothy Beard and J. W. Beard.—p. 191.
Velocities of Inhibition of Bacterial Growth by Sulfonamide and of Antagonistic Effect by P-Aminobenzoic Acid. J. Hirsch.—p. 199.
Antibodies Against Sheep Erythrocytes Produced by Injection of Hydatid Liquid in Patients with Hydatid Cyst. A. Graña.—p. 203.

Journal Industrial Hygiene & Toxicology, Baltimore

26:69-96 (March) 1944

Studies on Inhalation of 1: 3-Butadiene, with Comparison of Its Narcotic Effect with Benzol, Toluol and Styrene, and Note on Elimination of Styrene by Humans. C. P. Carpenter, C. B. Shaffer, C. S. Weil and H. F. Smyth Jr.—p. 69.
Further Observations on Lung Changes in Electric Arc Welding. O. A. Sander.—p. 79.
Shipyard Health Problems. P. Drinker.—p. 86.
Dust Feed Apparatus Useful for Exposure of Small Animals to Small and Fixed Concentrations of Dust. F. M. Stead, C. U. Dernehl and C. A. Nau.—p. 90.
Potential Lead Hazard in Milk Canning Industry. W. L. Lea and W. Z. Fluck.—p. 94.

Journal of Infectious Diseases, Chicago

74:1-80 (Jan.-Feb.) 1944

Behavior of Virulent and Avirulent P. Pestis in Normal and Immune Experimental Animals. E. Jawetz and K. F. Meyer.—p. 1.
Pertussis Toxin-Antitoxin Neutralization Technic. M. E. Roberts and Anne G. Ospeck.—p. 14.
Pertussis Antitoxin: Its Relationship to Protection in Actively and Passively Immunized Mice and Rabbits. Anne G. Ospeck and M. E. Roberts.—p. 22.
Use of Developing Chick Embryo as Method of Testing the Antibacterial Effectiveness of Wound Disinfectants. T. W. Green and J. M. Birkeland.—p. 32.
Action of Detergents on Staphylococcal Infections of Chorioallantois of Chick Embryo. T. W. Green.—p. 37.
*Influence of Level of Thiamine Intake on Susceptibility of Mice to Poliomyelitis Virus. A. F. Rasmussen Jr., H. A. Waisman, C. A. Elvehjem and P. F. Clark.—p. 41.
Saurian Malarial Parasite, Plasmodium Mexicanum, N. Sp., with Both Elongatum and Gallinaceum Types of Exoerythrocytic Stages. P. E. Thompson and C. G. Huff.—p. 48.
Saurian Malarial Parasites of the United States and Mexico. P. E. Thompson and C. G. Huff.—p. 68.

Thiamine Intake and Susceptibility to Poliomyelitis.—Rasmussen and his associates show that mice fed diets deficient in thiamine show a lower incidence of infection to Theiler's virus and to Lansing strain poliomyelitis virus than do animals fed a similar diet with optimum thiamine. In some instances these thiamine deficient survivors, when subsequently given adequate thiamine, become paralyzed after a prolonged incubation period. The decrease in susceptibility noted in mice on diets restricted in caloric value but adequate in all vitamins is similar to that observed in thiamine deficient animals but is less pronounced. The authors point out that their results may seem to be contradictory to those of Kuscynzski and of Sabin and Duffy. Actually, a different virus has been used and the experiments are not, therefore, directly comparable. This apparent discrepancy emphasizes the complexity of the problems studied and the necessity of caution against too extensive generalizations. Sprunt has shown that starvation or hydration results in a decrease in number and size of vaccinial lesions in rabbits. Many workers feel that tuberculous monkeys are more resistant to poliomyelitis than are normal animals. There also are the various blockage phenomena in which infection with one virus

prevents infection with a second. One is reminded also of the clinical impression from Heine's original observation to the present time that the well nourished child rather than the scrawny one is especially prone to develop poliomyelitis.

Journal of Lab. and Clinical Medicine, St. Louis

29:231-338 (March) 1944

Studies on Polysaccharide from Tubercle Bacillus. G. V. Kropp and J. A. Foley.—p. 231.
Chlorophyll: Experimental Study of Its Water Soluble Derivatives: IV. Effect of Water Soluble Chlorophyll Derivatives and Other Agents on Growth of Fibroblasts in Tissue Culture. L. W. Smith, with assistance of M. E. Sano.—p. 241.
Traumatic Autograft of Splenic Tissue in Body Wall. A. J. Gill.—p. 247.
Bacterial Activity of Some Di-(Hydroxyphenyl) Alkanes. B. Heinemann.—p. 254.
Study of Oils Used for Intramuscular Injections: Study of Physical, Chemical and Biologic Factors. W. E. Brown, Violet M. Wilder and Pauline Schwartz.—p. 259.
*Barbiturate Intoxication and Picrotoxin Treatment: Presentation of Case. B. W. Billow.—p. 265.
Cold Hemagglutination Reactions in Tuberculosis. R. S. Siffert and B. Krautman.—p. 270.
Purpuric Lesions in Meningococcic Infections: Diagnosis from Smears and Cultures of Purpuric Lesions. W. G. Bernhard and A. C. Jordan.—p. 273.
Plasma Clot Tensile Strength: II. Effect of Some Physical Factors, Anticoagulants and Coagulants. A. Shapiro, I. M. Tarlow, R. Oliver, A. I. Goldfarb, S. Bojar, R. Kaslow and M. Rockenmacher.—p. 282.

Barbiturate Intoxication and Picrotoxin Treatment.—According to Billow statistics reveal a widespread increase in the use of barbituric acid derivatives and a resultant rise in the number of poisonings, intentional or accidental. The symptoms of barbiturate poisoning vary with the amount of drug taken. When absorption is gradual, confusion, ataxia, difficulty in swallowing, vomiting and motor excitement occur. Any patient found in deep coma, with shallow rapid respiration, fixed miotic pupils, corneal reflexes abolished, absent reflexes, thready pulse and low blood pressure should suggest the possibility of barbiturate poisoning. The author reports the case of a nurse, aged 24, who had taken 3 Gm. of barbiturate, a quantity that is within the fatal range. Metrazol and nikethamide were employed in the beginning of therapy, but there were no clinical signs of improvement until picrotoxin was administered. Picrotoxin is the active principle of several plants, notably Anamirta paniculata, or "fish berries." Its use as an antidote in barbiturate intoxications was first suggested by Maloney, Fitch and Tatum. Picrotoxin stimulates the medullary and cortical centers, the vasomotor centers and the autonomic centers. It has a narrow margin of safety. Clinical evidence indicates that in barbiturate poisoning much higher doses may be used. It should be administered in divided doses. The amount and interval should depend on the response of the patient. The immediate object is to maintain adequate respiratory and circulatory function by the stimulant. The woman whose case is reported received in all 135 mg. of picrotoxin. She recovered.

Journal National Malaria Society, Tallahassee, Fla.

2:1-98, 1943

Malaria Control in War Areas. L. L. Williams Jr. and M. D. Hollis.—p. 5.
Anti-Malaria Ditching by Dynamite. N. H. Rector.—p. 11.
Entomologic Services in Regulation of Larvicide Program. G. H. Bradley and H. G. Hanson.—p. 21.
Entomologic Services in Regulation of Larvicide Program. H. L. Fellton.—p. 29.
Progress in Application of Laboratory Methods in Army's Malaria Control Program. D. M. Kuhns, Mary Ray and W. V. King.—p. 30.
Development of Entomologic Service of Fourth Service Command Laboratory as Applied to Army's Mosquito Control Program. W. V. King and D. M. Kuhns.—p. 39.
State and Local Organizations for Malaria Control in War Areas. L. G. Lenert and W. A. Legwen.—p. 49.
Community Education for Malaria Control. T. Stubbs and M. Derryberry.—p. 57.
Malaria Control Experience with Circular Joint Ditch Paving Slabs and Automatic Siphons. W. A. Legwen.—p. 61.
Transit-Plane Table Topographic Mapping Used for Malaria Control Drainage. W. A. Legwen.—p. 65.
Measurement of Population of Anopheles Quadrimaculatus Say. D. E. Eyles and W. W. Cox.—p. 71.
Method for Catching, Marking and Reexamining Large Numbers of Anopheles Quadrimaculatus Say. D. E. Eyles.—p. 85.
Intersection Line as Factor in Anopheline Ecology. A. D. Hess and T. F. Hall.—p. 93.

Journal of Nervous and Mental Disease, New York

99:229-342 (March) 1944

Anterior Cerebral Artery in Macaque Monkey (Macaca Mulatta). J. B. Campbell and F. M. Forster.—p. 229.
Some Aspects of Etiology and Treatment of Schizophrenia. J. Perlson.—p. 243.
Variations of Blood Diastase and Glucose in Depression. C. S. Roberts, W. J. Turner and J. H. Huddleson.—p. 250.
Vertebral Fractures in Metrazol Therapy With and Without Use of Curare as Supplement. N. L. Easton and J. Sommers.—p. 256.
Clinical and Physiologic Significance of Mayer's Phalangeal Reflex. L. Halpern.—p. 264.
Electricity as Pathogenetic Agent in Central Nervous System. M. Ostow.—p. 270.
Symbolic Identification Test: Projective Technic for Measurement of Id Forces within Personality. P. L. Goitein.—p. 279.
Experimental and Clinical Studies with Methylguanidine Sulfate. J. J. Madden and L. A. Kaplan.—p. 285.
Contribution to Differential Diagnosis of Myoclonus. H. de Jong and L. Jacobs.—p. 290.

Journal of Neurophysiology, Springfield, Ill.

7:83-148 (March) 1944

Interaction of Neighboring Fibers in Myelinated Nerve. A. S. Marrazzi and R. Lorente de Nó.—p. 83.
Electrical Activity of Regenerating Nerves in Cat. C. M. Berry, H. Grundfest and J. C. Hinsey.—p. 103.
Effect of Temperature on Oxygen Consumption of Brain Tissue. J. Field 2d. F. A. Fuhrman and A. W. Martin.—p. 117.
Experimental Analysis of Functions of Basal Ganglia in Monkeys and Chimpanzees. Margaret A. Kennard.—p. 127.

Journal of Nutrition, Philadelphia

27:213-286 (March) 1944

Nutritional Requirements of the Syrian Hamster. J. W. Hamilton and A. G. Hogan.—p. 213.
Effect of Germination, Stage of Maturity and Variety on the Nutritive Value of Soybean Protein. Gladys J. Everson, H. Steenbock, D. C. Cederquist and Helen T. Parsons.—p. 225.
Short Method of Calculating the Nutritive Value of Diets. G. H. Berryman and P. E. Howe.—p. 231.
Human Respiratory Quotients in Relation to Alveolar Carbon Dioxide and Blood Lactic Acid after Ingestion of Glucose, Fructose or Galactose. H. T. Edwards, E. H. Bensley, D. B. Dill and T. M. Carpenter.—p. 241.
Thiamine Requirement of Pigs as Related to Fat Content of Diet. N. R. Ellis and L. L. Madsen.—p. 253.
Interrelation of Methionine, Choline, Betaine and Arsenocholine in the Chick. H. J. Almquist and C. R. Grau—p. 263.
*Minimum Ascorbic Acid Need of Adults. Emma D. Kyhos, E. S. Gordon, Marian S. Kimble and E. L. Sevringhaus.—p. 271.

Minimum Ascorbic Acid Need of Adults.—Early in 1942 Kyhos and her associates conceived the idea of using male prisoners as subjects for a study of some of the basic nutritional requirements of healthy adults. Subjects were selected from volunteers after the project had been explained to the entire prison population of more than 1,100. The group was more than ordinarily homogeneous in that the men were on a controlled and regular regimen. They were regularly available for examination and tests; their cooperation was excellent. Information concerning diet, habits, history and physical condition was at hand. The daily vitamin C requirements of 71 male prisoners were investigated over a period of seventeen months. Oral disease was prevalent among subjects. The daily food lists revealed that no fresh fruit and very few fresh vegetables were included in the diet. Laboratory results of plasma ascorbic acid determinations in untreated persons showed that only men who were securing oranges or vitamin preparations for themselves had plasma values over 0.6 mg. per hundred cubic centimeters, nearly 80 per cent were under 0.2 mg. per hundred cubic centimeters, and 20 out of 71 showed no ascorbic acid in the plasma. Figures were slightly higher in August and September than during the rest of the year. Results of ascorbic acid supplements on plasma and gums were as follows: 25 mg. daily gave no significant elevation of the plasma values and only slight improvement in the gum disease; 50 mg. raised the plasma values noticeably, and definite improvement was noted in the gums, but this amount was not sufficient to maintain a plasma level of 0.8 mg. per hundred cubic centimeters during the winter and spring months. With a 75 or 100 mg. supplement the most satisfactory response of both plasma and gum healing was obtained. The 75 mg. also appeared sufficient for most of the men throughout the year. The few cases refractory to 75 mg. responded to an increase in dosage (100 mg.) within four to five weeks.

Journal of Pediatrics, St. Louis

24:249-370 (March) 1944

Hyperimmune Whooping Cough Serum: Further Studies. A. C. McGuinness, Janet G. Armstron and Harriet M. Felton.—p. 249.
Studies on Minimal Effective Dose of Water Soluble Vitamin K Substitute in Prevention of Hypoprothrombinemia in Newborn Infant. Sarah Hooker Hardwicke.—p. 259.
*Histoplasmosis: Report of Case in Infant and Experimental Observations. P. R. Beamer, E. B. Smith and H. L. Barnett.—p. 270.
*Immunization with Combined Diphtheria and Tetanus Toxoids (Aluminum Hydroxide Adsorbed) Containing Haemophilus Pertussis Vaccine. J. J. Miller Jr., Jeanette B. Humber and J. O. Dowrie.—p. 281.
Torantil (Histaminase) in Urticaria Following Serum Administration. J. A. Toomey, F. M. Kriete and H. C. Epstein.—p. 290.
Riboflavin, Pantothenic Acid and Biotin Excretion Tests in Patients with Paralytic Poliomyelitis. W. O. Frohring and J. A. Toomey; with technical assistance of Dorothy M. Dicken, Margaret M. Bicking and W. R. Mitchell.—p. 293.
*Acute Serous Meningitis in Scarlet Fever. L. K. Sweet and M. H. Lepper.—p. 295.
Serum Diastase in Newborn Infant. Ellen Ehrenfest Richman and G. W. Salmon.—p. 310.
Paralytic Rabies: Review of Literature and Report of Case. S. V. Love. —p. 312.
Tularemia in Infancy, with Report of Case. W. A. Daniel Jr.—p. 326.
Whooping Cough Control. J. H. Lapin.—p. 331.
Niemann-Pick Disease (Acute Idiopathetic Xanthomatosis, Phosphatide Lipoidosis, Lipoid Cell Splenomegaly—Niemann Type). M. F. Canmann.—p. 335.

Histoplasmosis.—A boy aged 11 months was admitted to St. Louis Children's Hospital because of an acute illness of one week's duration characterized by fever, cough and difficult respiration. Since 4 days of age the patient had had lesions of the skin which were diagnosed as impetigo and treated with soap and water and ammoniated mercury ointment. The lesions varied in number and severity under this treatment. About four days before admission an abscess developed at the right anterior nasal orifice, obstructing the nasal passage and producing swelling of the adjacent portion of the face. The abscess apparently ruptured spontaneously two days before the child entered the hospital. The clinical impression was that the infant had an overwhelming septicemia. The relation of the skin lesions to the general picture was not clear, except that they were possibly a port of entry for the organism. The patient was given dextrose and sodium sulfadiazine and isotonic solution of three chlorides intravenously. The intravenous injection of sodium sulfadiazine and isotonic solution of three chlorides was repeated, but the child became steadily worse and died thirteen hours after admission. Beamer and his associates at necropsy observed lesions in the lungs, liver, spleen, adrenal glands, kidneys, colon, appendix, bone marrow, lymph nodes and blood vessels. Macroscopically visible colonies of Histoplasma capsulatum were observed on blood agar plates (incubated aerobically at room temperature) on the fourth day following inoculation with blood taken from the heart at necropsy. Yeast-like forms of the fungus were observed in blood films prepared post mortem. Experiments indicate that Histoplasma capsulatum is resistant to drying and to low temperatures (from 5 to 8 C.). The fungus is destroyed in milk by heating at from 62 to 63 C. for twenty minutes. Infection of guinea pigs could not be established by oral feedings with large numbers of organisms.

Immunization with Combined Diphtheria and Tetanus Toxoid Containing Haemophilus Pertussis Vaccine.—The studies of Miller and his associates lead them to the conclusion that two injections of aluminum hydroxide adsorbed diphtheria and tetanus toxoids with 20 billion H. pertussis vaccine produced satisfactory immune responses with respect to diphtheria and tetanus, but the dose of H. pertussis vaccine was below optimal. The simultaneous administration of diphtheria, tetanus and pertussis antigens has no disadvantages as compared with sequential administration. On the contrary, it has the practical advantage of lessening the number of injections necessary. While the response to pertussis vaccine was not entirely satisfactory, the authors believe that this fault can be corrected either by increasing the numbers of Haemophilus pertussis in the mixture of diphtheria and tetanus toxoid with pertussis vaccine, which is referred to as the AADTP mixture, or by giving an extra dose of pertussis vaccine during the interval between AADTP injections. They have been particularly impressed with the exceptionally high and enduring levels of tetanus antitoxin obtained with aluminum hydroxide adsorbed toxoid, as well as with the perfect score in the Schick tests. Aluminum hydroxide appears to be distinctly superior to alum in the preparation of tetanus toxoid and perhaps of diphtheria toxoid as well.

Acute Serous Meningitis in Scarlet Fever.—According to Sweet and Lepper, reports of central nervous system involvement in the course of scarlet fever are extremely rare. Even more rare are reports of an acute serous meningitis occurring early in the disease. The latter syndrome apparently has been described in only 24 cases, all reported from Europe. Within recent months the authors have seen 11 patients who developed an acute serous meningitis between five and eight days after the onset of scarlet fever. They report the histories of these 11 patients. The disease is characterized by fever, meningeal irritation, prostration and toxemia. The spinal fluid shows a pleocytosis of from 32 to 1,100 cells, almost all lymphocytes, increased protein, and normal sugar. Following lumbar puncture the symptoms subside. No sequelae have been encountered. The etiology of the complication is uncertain. The clinical features strongly suggest that it is caused by a filtrable virus. To date there are no definite data to confirm this impression.

Maine Medical Association Journal, Portland

35:41-60 (March) 1944

Occupational Diseases of Skin in Maine. L. Babalian.—p. 41.
Eye Problems in Industry. E. E. Holt Jr.—p. 47.
Anemias; Some Basic Concepts. L. H. Berrie.—p. 50.

35:61-80 (April) 1944

Common Cold. L. H. Berrie.—p. 61.
Progress in Crusade Against Tuberculosis in Oxford County, Maine, Over Period of Ten Years (1933-1943). June Hills Hunter.—p. 65.

Medical Annals of District of Columbia, Washington

13:89-132 (March) 1944

Medical Service in Industry. P. Drinker.—p. 89.
Study of Bronchiectasis at Station Hospital, Fort Belvoir, Virginia. T. E. Thompson Jr., F. C. Cawley and A. Seltzer.—p. 93.
Morbid Fears. F. S. Caprio.—p. 98.
*Results of Treatment of Acute Alcoholic Psychoses by Hypertonic Saline. I. J. Silverman.—p. 102.
Diagnosis and Differential Diagnosis of Meningitis. L. K. Sweet. —p. 108.

Hypertonic Saline in Acute Alcoholic Psychoses.—The work reported by Silverman is a continuation of a previous report in the *Medical Annals* (**9**:291 [Sept.] 1940; abstracted in THE JOURNAL, Nov. 16, 1940, p. 1752). The hypertonic saline in the blood stream attracts fluid by osmosis from the cerebrospinal system, the choroid plexus, the perineural sheaths and the perivascular tissues. The emotional reactions of the acute, disturbed alcoholic addicts soon come under control, usually after the first intravenous infusion of 150 or 200 cc. of the 5 per cent solution of sodium chloride. The disorientation and confusion and the hallucinations clear up soon afterward. The author cites figures to prove that the percentage of deaths in uncomplicated cases of acute alcoholic psychosis has decreased greatly. In patients with cardiac decompensation the hypertonic solution should not be given intravenously. It should be given in 1.5 or 2.5 per cent strength subcutaneously. The same procedure can be adopted for the occasional alcoholic patient who is too violent on admission to accept the solution intravenously. The quieting effect in some of these cases is striking. The mistake should not be made of trying to subdue these patients by sedatives alone, as dangerous amounts are then necessary. Morphine should not be given at all. Spinal punctures have been omitted. Spinal puncture is done if meningitis is suspected or the question of hemorrhage must be settled. If the question is merely one of diagnosing central nervous system syphilis, it appears to be much better to delay it until the patient is over his alcoholic psychosis.

Nebraska State Medical Journal, Lincoln

29:65-96 (March) 1944

Mechanism of Shock. A. R. McIntyre.—p. 69.
Symptoms of Impending Shock. A. C. Johnson.—p. 73.
Substitutes for Human Blood and Plasma in Treatment of Shock. H. F. Gerald.—p. 77.
Treatment of Shock. J. D. Bisgard.—p. 80.
Bacillary Dysentery. L. O. Vose.—p. 84.

New England Journal of Medicine, Boston

230:303-338 (March 16) 1944

Nutritional Situation in Camps of Unoccupied Zone of France in 1941 and 1942 and Its Consequences. R. Zimmer, J. Weill and M. Dubois. —p. 303.

*Observations on Massive Dose Arsenotherapy of Early Syphilis by Intravenous Drip Method: IV. Three Years of Trial. B. Craige Jr. and J. F. Sadusk Jr.—p. 314.

Physical Therapy in General Medical Practice. A. L. Watkins.—p. 318.

Massive Dose Arsenotherapy of Early Syphilis.—Solutions were made up twice daily of 1,200 cc. of 5 per cent dextrose in a Fenwall flask with 120 mg. of mapharsen. Two flasks (2,400 cc. with 240 mg. of mapharsen) were administered daily over a period of twelve hours for five days, making a total for each patient of 1.2 Gm. of mapharsen. Craige and Sadusk review observations on 74 patients. In their experience massive arsenotherapy for early syphilis has not proved hazardous and does not present great difficulties in administration. The cardinal points to be observed are the establishment of diagnosis of early syphilis, exclusion of patients with fever, liver disease or severe nephritis, and periodic follow-up visits with determination of whether retreatment is necessary on the basis of serologic reaction six months later or of relapse at an earlier date. Its virtue lies in the facts that every patient receives an amount of treatment that has been found sufficient for cure in four fifths of the patients, that completion of a minimum adequate amount of treatment does not depend on the patient's returning, and that when the patient leaves the hospital he is noninfectious and almost always remains so. Its disadvantage lies in the danger of an occasional severe toxic reaction that may rarely be fatal. With massive arsenotherapy by the five day continuous intravenous drip method satisfactory results were obtained in 79 per cent of the cases observed six months or more. By retreating selected patients the total of satisfactory results has been raised to 87 per cent.

New York State Journal of Medicine, New York

44:449-560 (March 1) 1944

Recent Advances in Diagnosis and Treatment of Virus and Atypical Pneumonias. J. Sachs.—p. 485.

Ménière's Syndrome—Its Mechanism and Management. M. Atkinson. —p. 489.

Report of Outbreak of Gonorrhea at Boys' School. R. S. Westphal. —p. 493.

Simplified Method of Continuous Caudal Analgesia in Obstetrics. J. A. Miller.—p. 497.

Role of Physical Medicine in Treatment of War Casualties. J. A. E. Syracuse.—p. 500.

Eponyms in History of Cancer. J. B. Gilbert.—p. 511.

44:561-672 (March 15) 1944

Narcotic Properties of Carbon Dioxide. M. H. Seevers.—p. 597.

Progress in Study of Experimental Endocarditis. W. J. MacNeal, Martha Jane Spence and Anne Blevins.—p. 603.

Fat and Vitamin A Absorption in Sprue. D. Adlersberg.—p. 606.

Surgical Aspects of Gastric Ulcer. J. D. Stewart and F. M. Zaepfel. —p. 611.

X-Ray Diagnosis of Bronchogenic Carcinoma. G. N. Scatchard.—p. 617.

Significance of Absent Pharyngeal and Corneal Reflexes in Cutaneous Diseases. T. N. Graham and G. M. Lewis.—p. 621.

Agranulocytopenia in Patient Receiving Cinchophen and Synthetic Vitamin K. W. B. Rawls.—p. 626.

Fever as Presenting Symptom of Brain Tumor. B. Brodsky and I. Gray —p. 628.

Ohio State Medical Journal, Columbus

40:197-292 (March) 1944

Problem of Protein Intake in Wartime. Martha Koehne.—p. 213.

Malaria. E. C. Faust.—p. 220.

Meeting Today's Health Problems. E. E. Kleinschmidt.—p. 227.

Treatment of Squint in Childhood. S. H. Patterson.—p. 235.

Seasickness and Airsickness. H. N. Holmes.—p. 237.

Botanic Medicine in Western Country. P. D. Jordan.—p. 240.

40:293-396 (April) 1944

Traumatic Encephalopathy: With Case Reports. H. A. Lipson, E. Zucker and L. J. Karnosh.—p. 309.

Studies in Human Inheritance: XXIV. Bridged Sella as Genetic Trait. L. H. Snyder and F. Blank.—p. 318.

What Army Chest Survey Means to Civilian Doctor. R. H. Thompson. —p. 321.

Acute Gangrenous Appendicitis Complicated by Pylephlebitis. O. Eitzen. —p. 325.

Pneumococcus Meningitis Treated with Penicillin: Report of Case. F. Meola.—p. 327.

History of Human Dissection. L. F. Edwards.—p. 331.

United States Naval Med. Bulletin, Washington, D. C.

42:501-762 (March) 1944. **Partial Index**

Oxygen Equipment in Ambulance Plane: Justification for Its Use. H. H. Groskloss and F. K. Smith.—p. 501.

Medical Complaints of Flying Personnel: At Naval Air Station. A. Graybiel, N. Brown and R. Crispell.—p. 508.

*Diphtheria in the Tropics: Report of 18 Cases on United States Naval Hospital Ship. R. F. Norris, R. A. Kern, H. P. Schenck and L. E. Silcox.—p. 518.

Role of Sedation in Military Medicine. H. P. Rome.—p. 525.

Psychoneuroses Precipitated by Combat. R. S. Schwab, J. E. Finesinger and Mary A. B. Brazier.—p. 535.

Cardiovascular Disease in Tropics. A. S. Hyman.—p. 545.

Studies in Weil's Disease. G. Lorenz Jr.—p. 560.

Mumps Meningoencephalitis. C. L. Steinberg.—p. 567.

*Erythrocyte Sedimentation Rate in Mumps and Its Complications. S. Candel, M. C. Wheelock, J. P. Turk Jr. and J. L. Smoot.—p. 571.

Method and Study of Surface Decompression as Routine Procedure. F. J. Gouze.—p. 578.

Evaluation of Bismuth and Arsenicals in Treatment of Vincent's Gingivitis. W. E. Ludwick.—p. 584.

X-Ray Therapy at Foreign Shore Station. A. V. Winchell.—p. 587.

Recent Development in Intravenous Anesthesia. R. B. Phillips.—p. 592.

Postoperative Pulmonary Atelectasis. J. M. Marshall.—p. 601.

Treatment of Compound Fractures Aboard Hospital Ship. J. T. Nicholson, L. K. Ferguson, R. B. Brown and E. W. Godfrey. —p. 607.

Fracture of Condyle of Mandible. J. A. Doherty.—p. 641.

Eye Injuries, with Remarks on Plastic Surgery. A. A. Knapp.—p. 651.

Early Skin Grafting of War Wounds. H. A. Lamont.—p. 654.

Diphtheria in the Tropics.—Norris and his associates state that a number of cases of diphtheria occurred among the armed forces in the Solomons and neighboring islands. Eighteen such patients were observed on a hospital ship during their evacuation at from ten to sixty days following the onset of their illness. Of the 18, 13 had developed some form of postdiphtheritic paralysis, 1 with fatal result. Diphtheria is not uncommon in the tropics, but it is a much milder disease than in tempe. ate climates. Its presence had not been suspected in most instances until the paralysis appeared. Obviously there must have been many more than the 18 cases, since even in temperate climates cases showing paralytic phenomena comprise only 10 per cent of the cases and in the tropics the figure is said to be much less. Of the 13 cases of paralysis, 11 were not suspected of being diphtheritic for a week or more after the onset, 9 were not suspected until paralysis had appeared and 3 had not even been admitted to the sick list during the attack of sore throat. Consequently the total number of cases is unknown and contacts could not be traced. The efficacy of antitoxin in the usual doses suggests that there is no fundamental immunologic difference between the strains of Corynebacterium diphtheriae in the tropics and those in the United States. Fortunately postdiphtheric paralyses tend to recover completely within a number of weeks. In the cases observed by the authors improvement was at times apparent in the course of a few days. But that there may be fatalities from paralysis is illustrated by 1 case. Moreover, the introduction of the mild tropical disease to temperate zones is followed by an increased severity. Paralysis cannot be prevented by antitoxin given after the third day of the disease. It should therefore be routine to make smears and cultures in all cases of sore throat regardless of the apparent mildness of the clinical picture.

Erythrocyte Sedimentation in Mumps and Its Complications.—Candel and his associates studied 37 consecutive cases of mumps, all in males. Thirteen were uncomplicated, 10 were complicated with meningitis and 14 were complicated with orchitis. The Cutler method was used to determine the erythrocyte sedimentation rate. As a control group, 30 healthy males were studied. In uncomplicated mumps and in mumps meningitis the erythrocyte sedimentation rate does not differ significantly from the normal, while in mumps orchitis there is a definite increase in the rapidity of the erythrocyte sedimentation rate. In several cases of mumps the presence of a rapid sedimentation rate above 15 millimeters per hour enabled the authors to predict the appearance of orchitis as a complication of the disease. A rapid sedimentation rate may persist for weeks after apparent recovery in mumps orchitis and possibly denotes the persistence of an inflammatory or degenerative process in the testis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Rheumatic Diseases, London

3:195-236 (Dec.) 1943

*Analysis of 388 Cases of Rheumatoid Arthritis. J. G. Sclater.—p. 195.
Study of Liver Function and Plasma Volume in Chronic Rheumatism by Means of Phenol-Tetrabrom-Phthalein Sodium Sulfonate. G. L. Robinson.—p. 207.
Clinical Contribution to Study of Etiology of Fibrositic Nodule. W. S. C. Copeman.—p. 222.
New Paths of Investigation for Diagnosis and Therapy. E. Freund. —p. 226.

Rheumatoid Arthritis.—Sclater surveys over 388 cases of rheumatoid arthritis. The disease was found to be two to three times more common in females than in males. The onset occurred most frequently between 35 and 54. The incidence of onset between 55 and 64 was about the same as that between 35 and 54. A history of preceding infection was obtained in 72 of 388 cases (18.3 per cent). The incidence of focal sepsis was 147 (38 per cent). No case of arthritis developed during pregnancy, but of the 107 patients in the child-bearing period 27, or 25 per cent, had rheumatoid arthritis within six months of parturition. Nineteen women out of 132 (14.4 per cent) between the ages 35 to 54 had symptoms of arthritis within two years of cessation of menstruation. The disease had been present for five years or more in 47.6 per cent of the cases when first seen. The degree of crippling was found to be closely related to the duration of the disease.

British Journal of Experimental Pathology, London

24:227-262 (Dec.) 1943

*On Occurrence of Antibacterial Substances in Green Plants. E. M. Osborn.—p. 227.
Carcinogenic Constituents of Shale Oil. I. Berenblum and R. Schoental.—p. 232.
Ultramicroscopic Observations on Morphology and Development of Vaccinia Virus in Vitro. K. B. E. Merling.—p. 240.
Production of Drug-Resistant Cultures of Bacteria in Vitro and Study of Their Interrelationships. J. McIntosh and F. R. Selbie.—p. 246.
*Sensitizing and Indicator Action of Victoria Blue and Janus Green on Flocculation Reaction for Syphilis. F. M. Berger.—p. 252.

Antibacterial Substances in Green Plants.—Osborn made a systematic search for antibacterial substances in green plants. It was found desirable to use portions of all available parts—roots, stem, leaf and reproductive organs. In certain cases the inhibitory substance was found to be produced by an enzyme acting on an inactive precursor, the enzyme being located in one part of the plant, the precursor in another; unless both parts were used together in the test no inhibitor was produced. The material was ground up by pestle and mortar with sand and sufficient distilled water to produce a pulp. This was strained through fine silk, and the resulting extract was tested against Staphylococcus aureus and Escherichia coli. About 2,300 species of plants belonging to 166 families have been tested. Of these, 63 genera contain substances which inhibit the growth of one or both test organisms. Extracts made from plants belonging to the same family tend to show a similar specificity and potency. Inhibitory substances are in some cases distributed throughout the plant, in others restricted to one part. Drying of some plants causes a loss of inhibitory power; in other cases there is no loss. Certain well known drug plants, e. g. Atropa, Datura and Digitalis, show no inhibitory power when tested by this method.

Action of Dyes on Flocculation Test for Syphilis.—Berger investigated the influence of a number of different dyestuffs on the flocculation test for syphilis. Janus green, Victoria blue and certain other dyes had both a sensitizing and an indicator action on the reaction. Syphilitic serum containing too little of the reacting substance to react with a suitable heart extract without dye showed flocculation in the presence of Victoria blue and Janus green. These dyes were also taken up by the precipitate, leaving a water-clear supernatant fluid. The sensitivity of the reaction was a function of the amount of dye. Antigens containing dyes attained their full sensitivity immediately after dispersion and maintained the same level of sensitivity for some time thereafter. Making use of the sensitizing effect of Victoria blue, the author devised a simple and reliable slide flocculation test for the serologic diagnosis of syphilis. Although the dye test is somewhat more sensitive than Wyler's modification of the Wassermann test or the Kahn flocculation test, it was not as sensitive as the collodion particles agglutination test. The dye test is, however, easier to perform, as little laboratory equipment is required for its performance and the stock antigen keeps indefinitely. The author discusses the mechanism of the sensitizing action of dyes and the possibility of sensitization of other antigen-antibody reactions by suitable dyes.

Edinburgh Medical Journal

51:1-64 (Jan.) 1944

Localized Arterial Thrombosis of Indeterminate Origin. J. R. Learmonth, W. Blackwood and R. L. Richards.—p. 1.
Protective Diet. Ruth Pybus.—p. 21.
Uses and Abuses of Female Sex Hormones. T. N. MacGregor.—p. 39.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

51:1-84 (Feb.) 1944

Incidence of Hemolytic Disease of Fetus ("Erythroblastosis Foetalis") in Different Families. Value of Serologic Tests in Diagnosis and Prognosis. K. E. Boorman, B. E. Dodd and P. L. Mollison.—p. 1.
Unique Constructive Operation. V. Bonney and A. H. McIndoe. —p. 24.
Placenta in Eclampsia and Nephritic Toxemia. N. M. Falkiner and J. O. E. Apthorp.—p. 30.
Two Unusual Causes of Intraperitoneal Bleeding Giving Rise to Collapse. W. F. T. Haultain.—p. 38.
Pregnancy Associated with Congenital Cystic Disease of Lung. J. P. Maxwell.—p. 42.
Case of Retroperitoneal Pelvic Ganglioneuroma. S. G. Clayton.—p. 44.
Epidemic Encephalitis and Pregnancy. A. J. Hall.—p. 49.
Endocrine Therapy in Gynecology and Obstetrics. P. M. F. Bishop. —p. 51.

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Vesalius the Anatomist. L. Cowlishaw.—p. 493.
*Rh Factor: Its Incidence in Series of Victorian Red Cross Donors. R. T. Simmons, J. J. Graydon, Rachel Jakobowicz and Lucy M. Bryce.—p. 496.
Some Notes on Fly Control. J. M. Dwyer.—p. 501.

Incidence of Rh Factor in Blood Donors.—Simmons and his associates ascertained the incidence of the Rh factor in the blood of donors of the Red Cross Transfusion Service in Melbourne, in order to establish a pool of known Rh negative donors for mothers and erythroblastotic infants requiring blood transfusion and for Rh negative patients requiring repeated transfusions. They examined samples of blood from 2,593 adult white persons for the Rh factor by means of the slide technic. With a high titer human anti Rh serum, 458 (17.67 per cent) of these samples were found Rh negative. None of the samples classified as Rh negative by this method reacted with the anti Rh guinea pig serum received from Dr. K. Landsteiner, when tested by the standard tube method. Subsequent tests with another specimen of human anti Rh serum detected an occasional Rh positive specimen of blood among those previously classified as Rh negative. These results and results of absorption experiments confirm opinions of other workers that the Rh factor is not a single entity and that different human anti Rh serums give results which, although substantially in agreement, show occasional discrepancies. Human anti Rh serums selected for testing purposes should therefore be those which in combination detect the greatest percentage of Rh positive blood samples.

Prensa Médica Argentina, Buenos Aires

30:2327-2378 (Dec. 8) 1943. **Partial Index**

*Emphysema of Orbit. M. de Abreu.—p. 2344.
Pulmonary Tuberculosis and Mitral Stenosis. O. Garré and J. A. Marti. —p. 2353.

Emphysema of Orbit.—De Abreu's method of roentgen examination of the orbit after artificial production of emphysema of the orbit by injection of air into the retrobulbar space is a new procedure of clinical value in determining the diagnosis, localization and size of orbital tumors. The injecting needle enters at a point in the lower external border of the orbit. From 6 to 10 cc. of air is introduced. Puncture of the orbital vessels must be avoided because of danger of gas embolism. Anterior and oblique roentgenograms and tomograms in a tangential plane are taken. The air is released by puncture when the examination is completed. The procedure is harmless provided proper technic is used. It can also be employed for biopsy and for a differential diagnosis of exophthalmos.

Book Notices

The Nature and Treatment of Mental Disorders. By Dom Thomas Verner Moore, O.S.B., Ph.D., M.D., Professor of Psychology and Psychiatry, Catholic University of America, Washington, D. C. Foreword by Edward A. Strecker, M.D., Professor of Psychiatry, Graduate and Undergraduate Schools of Medicine, University of Pennsylvania, Philadelphia. Cloth. Price, $4. Pp. 312. New York: Grune & Stratton, 1943.

This shows not only inclusive knowledge of the literature of psychiatry but, what is more important, an extensive and varied clinical experience. The author is not committed to any single school of thought, but rather in his consistent endeavor "to help human beings in mental difficulty" (p. vii) he adapts and utilizes any and all available technics. His explanation of etiology and therapy is largely given through the analysis of case histories. For example, his discussion of dream analysis and free association is given in 2 detailed case histories (chapters V and VI), and thirteen pages of case history follow five pages of explanation of bibliotherapy (chapter XIII). He is interested always in finding help for the patient, never in fitting the patient to a therapeutic theory. It is interesting to note that Dr. Moore's eclectic approach to psychiatric problems is so thoroughgoing that he is even willing to profit by suggestions from his patients (e. g. his comments on "occupational therapy," p. 145). Most of the chapters are provided with helpful summaries; there are adequate author and and subject indexes, and an extensive appendix, "Classification and Definition of the Clinical Entities of Psychiatry," is included. The book is eminently practical and the style lucid. It should be of particular value to nonpsychiatric physicians, psychiatric nurses and social workers, and it should prove illuminating reading for any psychiatrist who is insistent on the worth of one technic of therapy to the exclusion of all others.

Rose & Carless' Manual of Surgery. American (Sixteenth) edition edited by William T. Coughlin, B.S., M.D., F.A.C.S., Professor of Surgery and Director of the Department of Surgery, St. Louis University School of Medicine, St. Louis. From the Sixteenth English edition by Cecil P. G. Wakeley, D.Sc., F.R.C.S., F.R.S.E., Senior Surgeon, King's College Hospital, London, and John B. Hunter, M.C., M.Chir., F.R.C.S., Surgeon, King's College Hospital. Identical with the British Seventeenth (1943) edition. Cloth. Price, $9. Pp. 1,766, with 1,100 illustrations. Baltimore: William Wood & Company, 1943.

Again the effect of the war is noticeable in this seventeenth edition of a well known textbook. The stereotypy and triteness of description have largely disappeared. This is due as much to the destruction of plates and illustrations of somewhat venerable age by the physical inroads of war as to other causes. The healthy result of this débridement is again apparent. Also the war has disclosed numerous faults in surgical teaching which had to be remedied of dire necessity. An example is the disappearance of that old bugaboo of the student, Curling's ulcer. It is dismissed as follows: "Duodenal ulceration is a rare complication of infected burns and it was not met with in the Navy in the first world war." How many books published long after 1918 carried fulsome details of this complication? However, tannic acid and triple dyes are recommended for the treatment of burns; both methods have been discarded by our armed forces.

The illustrations are for the most part well chosen. A photograph of an anesthesia machine belongs in a catalogue and is not helpful to the student. It is reminiscent of pictures of ambulances, which are found in many textbooks on surgery; any school child recognizes an ambulance. The photograph of a sailor wearing an antiflash suit is worth the proverbial ten thousand words. The maintenance of a great volume of material at a pace equal to the rapid strides of modern surgery is not easy. The authors and collaborators are to be commended for revitalizing a respected name among surgical textbooks.

An Outline of General Physiology. By L. V. Heilbrunn, Professor of Zoology in the University of Pennsylvania. Second edition. Cloth. Price, $6. Pp. 748, with 135 illustrations. Philadelphia & London: W. B. Saunders Company, 1943.

This book is a significant contribution to progress in physiology. In relatively small compass it presents a generally sound point of view and a wealth of information about the principles of organization and activity of living systems. The work of more than three thousand authors is cited and critically evaluated in relation to the problems at hand. The author of the book has himself made important contributions to knowledge in general physiology and has demonstrated a grasp of its principles which makes his analysis valuable. In several instances the reviewer finds himself in disagreement with the author on interpretations, but this situation is inevitable in view of our fragmentary information about many basic processes in living systems.

The treatment of general physiology in this book is meant for serious advanced students. Physicians will find the sections on membrane physiology, the physiology of nerve and the nervous system, and the discussion of growth and senescence to be particularly valuable. The section on nutrition is also informative as regards comparative physiology but it is unfortunately less critical than other parts of the book as regards human pathology and medical implications. The bringing together of information about behavior in many species of animals and plants is especially useful in suggesting fruitful lines of investigation on man. The book is a valuable supplement to the available treaties on human physiology for all students and investigators of physiologic problems in man and other animals.

The Story of Food Preservation. By Edith Elliott Swank, M.S. Paper. Pp. 96, with illustrations by Luke Swank. Pittsburgh: H. J. Heinz Company, 1943.

This booklet presents a brief survey of the gradual evolution of man's efforts to preserve his food. The story is presented in a simple manner that should appeal to all types of readers.

As a basis for understanding the forces which must be combated if food is to be preserved, some discussion is given at first to the principal factors responsible for food spoilage. The action of microscopic agents such as bacteria and molds accounts for by far the greatest amount of food loss.

In the early days of our civilization, man used the means which were at hand for preserving his foods. This was simple storage in clean containers, sometimes aided by low temperature. Such methods were inadequate and suitable only for foods with natural keeping qualities. Then, so far back that no one knows their origin, came the use of such means of preservation as spices, wood smoke and later other harmless substances such as salt, vinegar and sugar. These substances were found to have beneficial effects other than preservation in the improved taste qualities they imparted to food. The story of their production and utilization in connection with food preservation is interestingly told. From time to time other much less desirable chemical agents came into popular use as preservatives. Formaldehyde and boric, benzoic or salicylic acid do preserve foods, but the possibility of harmful effects on the body is great and progressive food laws have ruled against their use. Certain other undesirable agents such as sulfur containing compounds might also have been mentioned in this connection. The preserving effects of drying and low temperature are as useful today as they have been through the centuries.

The growth of the canning industry is traced from a faltering beginning in the time of Napoleon to the industry which has now reached huge proportions. The care with which the products are prepared, the countless measures of control maintained to insure highest standards of quality and safety, as described here, all testify to the strides that have been made in this field of food preservation. Acquaintance with the facts presented in the discussion of modern commercial canning procedures will make any reader appreciate the effort that goes into the production of the canned foods which are taken so much for granted nowadays.

The March of Medicine: The New York Academy of Medicine Lectures to the Laity [Number VIII], 1943. Cloth. Price, $2. Pp. 151. New York: Columbia University Press, 1943.

Following a brief foreword and introduction the reader will find presentations on the problems of crime and punishment, the relation of war and medicine, individual and collective aggressiveness, behavior influences of babies, and the effect of society and war on each other. Also included is an address by Sir Norman Angell on plans for peace. While much of these offerings are interesting they tend to be mostly psychologic and philosophic considerations and in this sense are closely related to human behavior. Perhaps such material may not be interesting to all readers, but the present lectures fill a useful place in the series of lectures for the public which has become so well known in New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

GENERALIZED SKIN SENSITIZATION FROM TOPICAL CONTACT

To the Editor:—Are there any known cases of allergic reactions occurring after exposure to mustard or ten days after exposure to ivy poisoning? I underwent skin tests with lewisite and mustard. To the former I had a typical reaction with vesicle formation on the second day at the untreated area and erythema of the treated area. These spots now show slight hyperkeratosis and pigmentation. Where the mustard was applied there was no reaction of the decontaminated area, and, after two days, slight redness of the untreated area which gradually faded. Two days ago I noticed some erythema and itching of the latter area. Yesterday, five weeks after exposure, a typical mustard vesicle formed. I do not remember having heard of such a delay in the appearance of mustard reaction. The only parallel in my own experience was an occasion some years ago when I experimentally applied poison ivy to my skin, and a week or ten days elapsed before development of the typical rhus dermatitis.

Captain, M. C., A. U. S.

ANSWER.—It has been shown repeatedly that a generalized sensitiveness of the skin of the contact type can be artificially induced by limited localized application of sensitizers, such as poison ivy (Strauss, H. W.: Artificial Sensitization of Infants to Poison Ivy, *J. Allergy* **2**:137 [March] 1931), chlordinitrobenzene (Sulzberger, M. B., and Baer, R. L.: Sensitization to Simple Chemicals, *J. Invest. Dermat.* **1**:45 [Feb.] 1938) and others. A delayed reaction, appearing several days after a local application of a sensitizer, has also been known to occur. In an experiment with poison ivy in a person who had previously not been exposed to the plant, a dermatitis occurred ten days after the initial patch test (Field, Hans, and Sulzberger, M. B.: Experiments in Poison Ivy Sensitivity, *J. Allergy* **7**:139 [Jan.] 1936). Clinical experience also confirms such observations. The explanation is probably as follows: Some of the antigen applied to the skin becomes fixed by the cells. After an incubation period of several days in such previously nonsensitive persons the titer of antibodies may reach a sufficient concentration to react with the uneliminated fixed antigen. This possibility is analogous to the delayed reaction in serum sickness, which occurs in individuals receiving a primary dose of the serum. Undoubtedly, as in poison ivy and other contact allergens, the same process can take place in connection with mustard gas (dichlorethyl sulfide).

AMENORRHEA ASSOCIATED WITH POLYCYSTIC OVARIES

To the Editor:—A married couple are anxious to have children, but so far all efforts have been unsuccessful. The source of the difficulty has been traced to the wife, who has amenorrhea due to polycystic ovaries, the male partner being apparently normal. Her gynecologist at first advised x-ray treatment. Now he recommends, instead, resection of the cysts of both ovaries. Kindly let me know what the present status of this operation is. I should like to know exactly how much and what part of the ovary is removed in the operation and what the rationale of the procedure is. Is the occurrence of polycystic ovaries rare, so that few gynecologists have experience with the condition?

M.D., New York.

ANSWER.—The term "polycystic ovaries" is often loosely used by surgeons who have little concept of the actual pathologic condition responsible for the ovarian enlargement. Generally the multiple cysts are follicular in origin and may be cystic atretic follicles with old and probably nonfunctioning granulosa cells; but not infrequently the cystic follicles are surrounded by a zone of surprisingly active looking granulosa cells which almost certainly are the source of estrogen.

Such ovaries are not infrequently found in amenorrheic women and also in women with functional bleeding. Most gynecologists agree that resection of the cysts of such ovaries is not rational therapy for either amenorrhea or functional bleeding. It was tried and abandoned by numerous gynecologists almost half a century ago. The reason for failure is obvious when one considers the operation anatomically and physiologically. First, since the cystic follicles are generally distributed through the entire ovarian stroma, complete resection of the cysts is impossible without complete oophorectomy. Secondly, it is obvious that the primary trouble lies beyond the ovary. The disturbance in the ovaries is the result of their failure to receive the proper stimulus from the anterior pituitary to bring about the normal physiologic cycle. By way of encouragement the patient might be told that amenorrhea associated with "polycystic ovaries" sometimes ends spontaneously.

COLD HANDS AND FEET

To the Editor:—A girl aged 19 whose past history is essentially negative for serious illnesses complains of cold hands. She assists in a physician's office and during her frequent contact with patients finds this condition of annoyance to herself and the patients. Both hands and feet vary from a normal to a pale color, never blue. Her pulse rate, red and white blood cell count and hemoglobin are normal. Menstruation is regular and normal, routine examination of the urine shows it normal, the hair and skin are normal, and energy and activity are normal. The basal metabolic rate has not been determined. Suggestions regarding etiology and treatment will be appreciated.

M.D., Minnesota.

ANSWER.—The subject mentioned in the inquiry is probably one of those who have cold hands as a constitutional characteristic and not as a result of organic disease. However, organic diseases such as those affecting the nervous system, cervical rib, Raynaud's syndrome and thromboangiitis obliterans should be excluded by neurologic examination, determination of the status of pulsations in the peripheral arteries, determination of the effect of elevation and dependence on the color of the skin of the hands, and by determining whether or not exposure to cold produces pallor or cyanosis characteristic of Raynaud's syndrome. It is probable that all these studies will be negative. Most subjects with cold hands accept the situation as a minor handicap. Residence in a warm climate is ordinarily helpful. If coldness of the skin of the hands is of sufficient magnitude, cervical sympathectomy should be considered. Almost complete assurance can be given that this procedure will produce warm dry hands permanently. Such an operation should be performed only by an experienced neurosurgeon, who would carry out the operation so that Horner's syndrome is not produced.

RENAL PAPILLITIS

To the Editor:—Will you kindly supply information on papillitis of the kidney?

Ray M. Bobbitt, M.D., Huntington, W. Va.

ANSWER.—The apexes of the pyramids of Malpighi which project into the calices and the pelvis of the kidney are called renal papillae. The term renal papillitis has been used in referring to pathologic conditions in the renal papillae which may be the cause of hematuria. In cases of so-called essential or idiopathic hematuria changes in the tips of the renal papillae have been described which are characterized by engorgement of the capillaries, and in some cases the lesion apparently is secondary to a chronic localized infection. In many cases of bleeding of this kind there is no infectious element present, however, and the bleeding seems to result from an angiomatous condition in the renal papillae which extends into the calices and the renal pelvis.

Acute and chronic pyelonephritis, either ascending or descending, will involve the renal pelvis and the adjacent tissues with a resulting renal papillitis, but this condition would be coincident with infection in other tissues of the kidney and under such circumstances would not be considered as a separate clinical entity.

Renal papillitis as a cause of so-called essential hematuria frequently responds to applications of silver nitrate by means of pelvic lavage.

NAIL BITING IN ADULTS

To the Editor:—I am the examiner of the Women's Department of a large industrial concern. I have found that approximately 5 to 8 per cent of the applicants for work chew their finger nails. What is the significance of this? Does it indicate a type of mental instability due to stress and strain of the times?

M.D., California.

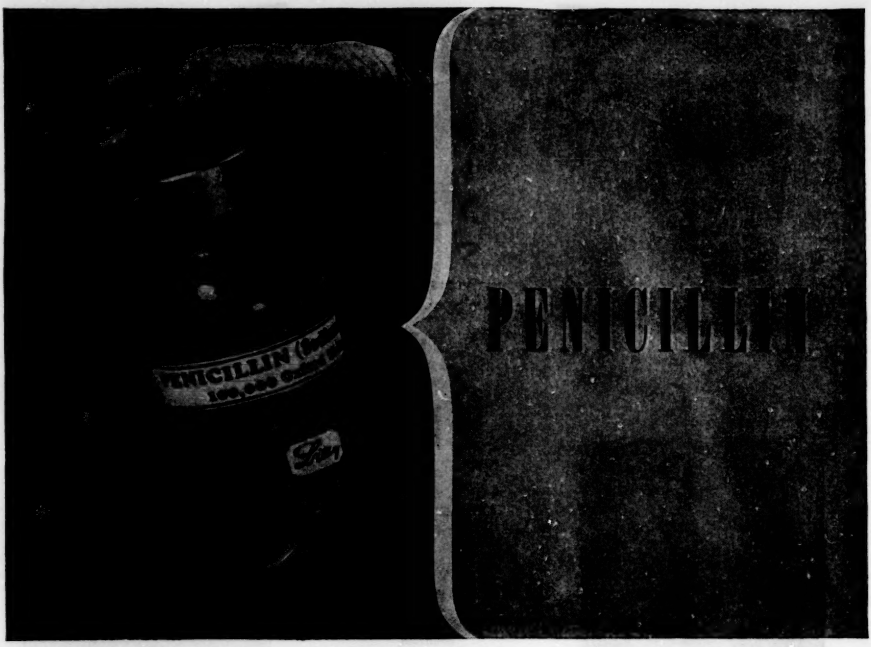
ANSWER.—Nail chewing or nail biting is an expression of a strained, tense and uneasy emotionally unstable state. It is one of several forms of motor discharge of inner tension or panic. It probably starts in childhood and continues in some form through adulthood. The stress and strain of present world affairs would have a tendency to increase the habit but not start it for the first time in an adult. The involved persons are emotionally unstable, but they are not psychotic. It is a difficult habit to overcome.

PROGESTERONE ADMINISTRATION AND PREGNANCY TESTING

To the Editor:—Would you kindly advise if the administration of 5 mg. of progesterone daily for seven days intramuscularly could produce a positive Aschheim-Zondek test (Friedman modification) in a nonpregnant woman?

Herbert Berger, M.D., Beaufort, N. C.

ANSWER.—It is not likely that the administration of 5 mg. of progesterone daily for seven days would produce a positive Aschheim-Zondek test in a normal woman.



★ **FROM THE BEGINNING, Eli Lilly and Company has been active in the development of Penicillin, and for several months has made it available to the armed forces on government allocation and to the Office of Scientific Research and Development.**

The material has been so scarce that very little has been available for civilian use, and then only on special assignment. Even in army and navy hospitals it often was restricted to patients unresponsive to sulfa-drug treatment.

Penicillin is now more generally available, and research to achieve the ultimate in chemotherapeutic perfection continues as a major project in the Lilly laboratories. Eli Lilly and Company, Indianapolis 6, Indiana, U.S.A.

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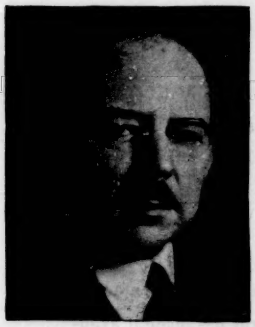

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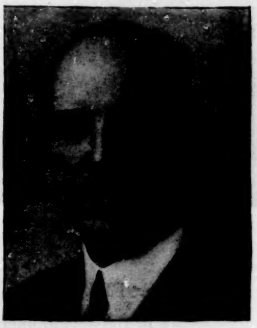

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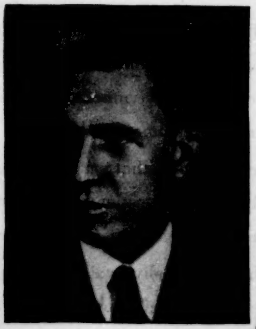

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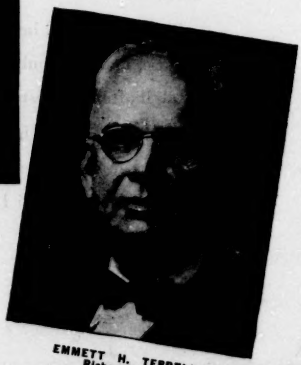

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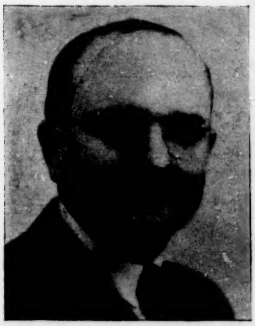

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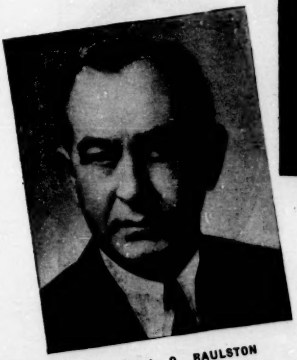

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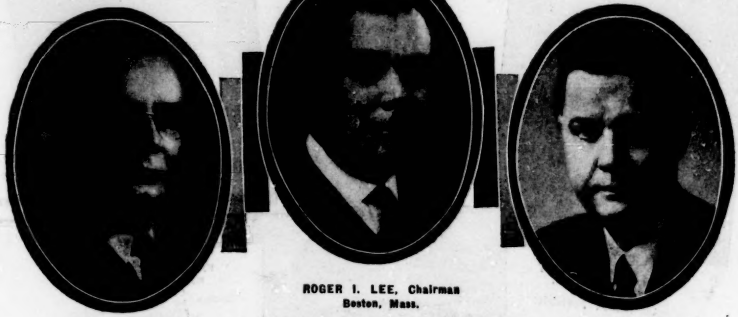

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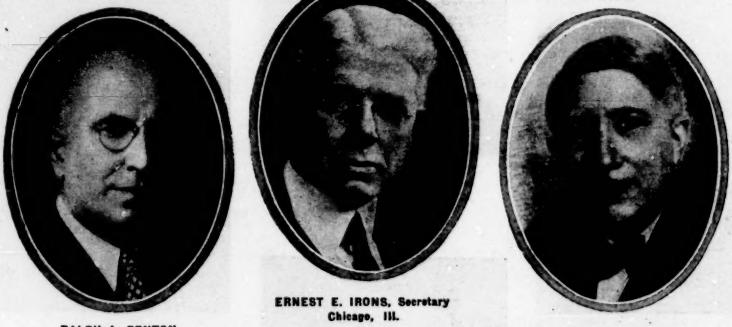

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